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FILE WHEN FOUND.**

Clarita N. Generao

Clarita N. Generao

June 22, 2000



Exhibit III

3001 Miller Road
P. O. Box 1631
Dearborn, Michigan 48121-1631

October 30, 1985

REGISTERED MAIL
RETURN RECEIPT REQUESTED

Office of the Administrator
Attn: Mr. Ronald L. McCallum
Chief Judicial Officer A-101
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

Subject: Petition to Review
Final Permit # MI-163-1W-0002
Disposal Well No. 2
Dearborn, Michigan

With a letter dated October 11, 1985, and received by Rouge Steel Company on October 21, 1985, Mr. Charles H. Sutfin, Director, Water Division, U.S. EPA, Region V, transmitted the subject disposal well permit. The permit was signed on September 30, 1985, and becomes effective on October 30, 1985.

As a condition of the permit, Rouge Steel Company is required to provide a "preliminary assessment of continuing releases" by November 8, 1985 (Part I, J. and Appendix F). The permit in the form proposed for public notice required this assessment within 45 days of the effective date of the permit.

Rouge Steel Company hereby requests review of the period of time required for preparation and submittal of the preliminary assessment. The proposed permit would have allowed a period of 45 days after the effective date of the permit; the final permit allows only nine days. This reduced period is unreasonable for the following reasons.

The permit was not received until October 21, 1985, and does not allow adequate time to prepare the information requested. Deep well No. 2 is located within the perimeter of a steel manufacturing plant which includes about 500 acres. There are seven major manufacturing units within the plant perimeter, including the coke ovens, blast furnaces, basic oxygen furnaces, electric arc furnaces, cold mills, hot mills, and powerhouse, where process and other wastes are generated prior to disposal off-site. Accurately identifying all solid waste management units at the plant will be a time consuming endeavor for which a more reasonable period of time is requested.

- . The information requested includes a map of the facility and a distance of 1,000 feet around the property line at a scale of one inch equal to not more than 200 feet. No map of this area meeting these specifications is known to exist.
- . The "EPA Draft Statutory Interpretation of 1984 RCRA Amendments on Corrective Action for Releases from Hazardous Waste Facilities" dated January 30, 1985, from Mr. Jack W. McGraw, Acting Assistant Administrator, states that guidance on corrective measures for Class I and deep Class IV injection wells is to be developed. This guidance has not yet been made available. This guidance should be available to all affected facilities before they are required to submit this report.
- . In other requests to smaller plants, EPA has allowed sixty days to prepare and submit the required information.
- . There is no statutory or regulatory basis that requires this information be submitted by November 8, 1985.

Rouge Steel Company asserts that it was an abuse of discretion to reduce the period of compliance for the preliminary assessment from 45 days to nine days. The permit should be modified to extend the period of time to 45 days after the effective date of the permit, or to December 14, 1985.

Sincerely,

ROUGE STEEL COMPANY

By Herbert Weinberg

Herbert Weinberg
Vice President
Engineering and Facilities

cc: Mr. Charles H. Sutfin
Director, Water Division
U.S. EPA, Region V

Spill Plan



TRANSPORTATION & ROUGE SERVICES

FORD MOTOR COMPANY
TRANSPORTATION AND ROUGE SERVICES
RCRA CONTINGENCY PLAN

SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

POLLUTION INCIDENT PREVENTION PLAN

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INTRODUCTION

- A. Introduction
- B. About this Plan
- C. Certification Statement

FORD MOTOR COMPANY
TRANSPORTATION AND ROUGE SERVICES
3001 MILLER ROAD
DEARBORN, MICHIGAN 48121
(313) 594-1014

INTRODUCTION

The information provided in this plan is for use by Transportation and Rouge Services in responding to unusual or sudden releases affecting the environment in the Rouge complex (e.g. gases, fumes, smoke, chemical releases, oil spills). These releases may be single incidents or the result of a more complex emergency (fire, tank leakage, injury accident, etc.) that results from T&RS activities or from manufacturing facilities which exceed the capability of the affected location. In the case of a complex incident the emergency response plans prepared for other locations may have to be consulted to provide a comprehensive and well balanced plan of action.

Appropriate portions of this plan will be implemented by the facility Emergency Coordinator or a designated alternate in case of sudden and/or unusual releases of contaminants to the environment. Rouge plant personnel and local agencies listed in the addressees section of the plan have been furnished copies of this plan. The plant security office and the designated Emergency Coordinator maintain the most current copies of the plan and are responsible for updating the information.

Transportation and Rouge Services (T&RS) spill response control responsibilities begin whenever a material release, fire, or explosion (which could threaten health and welfare of Rouge personnel, the public, or the environment) occurs outside the boundaries of any plant within the Rouge complex. Each plant at the Rouge Complex has its own spill plan and spill response team. Each plant is responsible for releases, fires, or explosions which occur within its boundaries. T&RS equipment and personnel are available to aid other plants and services during an imminent or actual emergency situation.

T&RS responsibilities end when cleanup is completed such that exposure or damage to the public or the environment is minimized or mitigated.


ABOUT THIS PLAN

Anyone who may be involved in responding to an environmental emergency or release at Transportation and Rouge Services must be familiar with this plan before it is needed in an emergency. We suggest the following sequence:

1. Become familiar with the plan by reading it and noting passages that apply to your area of responsibilities.
2. Keep the plan updated by replacing outdated material as new pages are supplied.
3. Know how to use each section in relation to other sections.
4. Copy and post important pages such as phone lists.
5. Use the plan as a springboard for developing training programs and drills on such things as containment, evacuation and cleanup.

CERTIFICATION STATEMENT

I have reviewed the Spill Plan for Transportation and Rouge Services dated June 1, 1988. I am familiar with the facility and its operations. I hereby certify that this plan has been prepared in accordance with good engineering practices and that it meets the requirements of 40 CFR 112 for a "Spill Prevention Control and Countermeasure Plan".

 (Signature)
Thomas M. Doran (Typed/Printed Name)
February 27, 1989 (Date Plan Certified)

027143 (Professional Engineer Certification No.)
February 14, 1980 (Date of P.E. Certification)

Michigan (State of Certification)

Plan Prepared By: C. Ozar, Environmental Control Engineer
Environmental Services, Transportation and Rouge Services

Date of Original Plan: June 1, 1988

Date of this Revision: February 6, 1989

EPA ID Number: MID 000 809 756

Michigan PIPP Number: 11172

Standard Industrial Code: 3711



Technical and Transportation Services
Manufacturing Operations

Ford Motor Company
3001 Miller Road
Dearborn, Michigan 48121

March 15, 1989

David Hales, Director
Michigan Department of Natural Resources
P.O. Box 30028
Lansing, Michigan 48909

MID08 7738431

cc: Director, Wayne County Emergency Coordinator
Commander, United States Coast Guard, Marine Safety Office
Director, Environmental Protection Agency, Region V
District Supervisor, Michigan Department of Natural Resources,
Northville
Fire Chief, Dearborn Fire Department

Subject: RCRA Contingency Plan, Spill Prevention Control and
Countermeasure Plan, and Pollution Incident Prevention Plan

We are pleased to submit our revised Contingency, SPCC/PIPP Plan for
compliance with Michigan Public Act 245 and EPA regulation 40 CFR 112.

Enclosed is a copy of the modified Spill Plan, including a Phone Call
Alogrithm located in the front pocket of the three ring binder.

The objective of this revision is to develop a plan that is succinct
and easily referenced in an emergency, and which can be readily updated
by Ford personnel. The information provided in this plan is for use by
Transportation and Rouge Services in responding to unusual or sudden
releases affecting the environment in the Rouge complex.

Should you have any questions or require further information, please
contact Mr. W. Dotterrer at 313/594-1014.

RECEIVED

MAR 27 1989

U. S. EPA, REGION V
SWB - PMS

R. Major

R. Major, Manager
Transportation & Rouge
Services
Technical & Transportation
Services

RECEIVED
MAR 27 1989

OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

FACILITY DESCRIPTION

- A. An Outline of the Organization.
- B. Security, Fire, Medical and Spill Response Team
- C. Utility (Power) Failure, Flood Potential, and Evacuation
- D. Drainage System
- E. Facility Drawings

TRANSPORTATION AND ROUGE SERVICES
TECHNICAL AND TRANSPORTATION SERVICES
FORD MOTOR COMPANY
DEARBORN, MICHIGAN

Transportation and Rouge Services is a manufacturing support organization within the Rouge Complex, which is comprised of the following list of departments. The primary functions performed in each department are also presented.

RR, RAILROAD DEPARTMENT

- . Heavy Equipment Repair
- . Railroad Services
- . Track Maintenance
- . Crane Services

CE, CONSTRUCTION AND ENVIRONMENTAL SERVICES DEPARTMENT

- . Engineering and Estimating Section
- . Rouge Construction Services
- . Building Services
- . Environmental Services Section:
 - Land Properties Unit
 - Environmental Services Unit

TT, TRAFFIC AND TRUCK SERVICES DEPARTMENT

- . Commercial Truck Services
- . Industrial Truck Services
- . Truck Repair Services
- . Traffic Services

SECURITY

The Rouge Plant Security Office (phone No. 313/322-3211) is manned 24 hours a day 365 days a year. A copy of this contingency plan is available in the security office; all security personnel are familiar with the plan and its requirements. The office is located at the Rouge Office Building located within the Rouge Complex. Emergency vehicles responding to an emergency must be escorted by Security at Gate 4 or Gate 10. A chain link fence encloses the 1,100 acre Rouge Manufacturing Complex in Dearborn, Michigan. All major roadways, parking lots, and material storage areas are well lighted.

FIRE

The Rouge Plant Fire Department has four vehicles, two utility vehicles and two ambulances. The brigade consists of a full time salaried staff of sixteen fire fighters, four officers, and one chief. During the day shift, the brigade has six fire fighters, one officer, and one chief. Off shifts and on weekends the brigade has a minimum of five fire fighters and one officer. The brigade has a mutual assistance agreement with the Dearborn City Fire Department. The City and Rouge plant fire fighting units are trained separately by the Rouge plant fire chief.

MEDICAL

The Central Medical staff provides medical assistance to the Rouge Plant Fire Department on all shifts. They respond to all medical emergencies. The Oakwood Hospital has been given a copy of this plan and is prepared to receive emergency medical cases.

SPILL RESPONSE TEAM

Transportation and Rouge Services spill response and cleanup personnel are divided into two groups;

- * The Environmental Services Unit responds to spills, in or upon, all surface water and adjoining shorelines.

- * The Land Properties Unit responds to spills, in or upon, all groundwater, land surfaces, or subsurface strata.

Personnel involved with spill control activities receive training in spill and release prevention and response as required by their assigned jobs. This training covers the implementation of the facility spill plan and use of all spill control equipment. All employees receive necessary retraining annually.

UTILITY FAILURE

It is unlikely that a utility (electrical) failure will cause a spill incident. All solenoid valves used in the liquid handling systems are normally closed when de-energized. All bulk material unloading facilities for liquid products are equipped with gear pumps and blocking valves to minimize the possibility of siphoning during a power loss. We are not aware of any increase in spill potential due to a power failure.

Loss of power would cause both the Schaefer Road Wastewater Facility and the North Rouge Wastewater Plant to overflow tide gate systems. In each case, the bypassed flows would receive partial treatment (oil polishing) prior to discharge into the Rouge River.

FLOOD POTENTIAL

The Rouge Manufacturing Complex comprises approximately 1,100 acres of land bound by Miller Road on the east, Rotunda Drive on the north, Schaefer Road on the west, and the Rouge River on the south. The complex is approximately three miles upstream from the Detroit River and is above the 100 year flood plain.

EVACUATION

Each plant and building in the Rouge Complex has its own evacuation plan for emergencies. T&RS personnel will use these standard procedures when applicable. When spill events happen in T&RS's areas of responsibility, it is the Emergency Coordinators job to make sure all nonessential personnel are evacuated. The coordinator shall also have security close off the emergency area until an all-clear signal is given.

DRAINAGE SYSTEMS

There are two main drainage systems within the Rouge complex; storm drains and sanitary drains. Spills which occur within the confines of any particular plant in the Rouge Complex and do not have release potential via these drainage systems are to be handled by the affected plant. Spills which result from T&RS activities or which occur inside or outside the plant and have release potential through the drainage systems, will be addressed by T&RS under this plan.

Spill response efforts include providing notification and remedial actions for spills which access either of the drainage systems or a release to the environment

Storm Drains

The Rouge Manufacturing Complex drains to the Rouge River. The storm sewer system can be broken down into four major areas:

-Outfall 001 (Gate 11)

All of the western portions of the Rouge Complex drain to the Schaefer Road Wastewater Treatment Facility. Normal process wastewater is pumped through two 110' diameter clarifiers and two oil polishing lagoons for treatment of oil and suspended solids. Storm drainage flows, which exceed the capacity of the pump station, overflow directly into the secondary oil polishing lagoon.

-Outfall 002/3 (Gate 12A)

The south portion of the Rouge Complex west of the Boat Slip drains to the Gate 12A sewer system. This system is protected with an oil containment lagoon.

-Outfall 004 (Boat Slip)

The northwestern portion of the Rouge Complex drains into the Interceptor, a combined free oily wastewater and storm water system, which in dry weather diverts all storm water drainage and free oily wastewater to the North Rouge Wastewater Treatment Plant.

In heavy runoff periods (when the combined free oily wastewater and storm water flows exceed the capacity of the interceptor system) these flows overflow a tide gate system and drain into the Boat Slip through the Roulo Creek Enclosure.

The northeastern portion of the Rouge Complex drains into the Roulo Creek Enclosure, which also serves to drain overflow from the City of Dearborn's combined sewage and storm water system. The Boat Slip is also protected with two sets of oil booms, continuous oil skimming equipment and a pneumatic barrier.

Outfall 006 (Tailrace)

The southeastern portion of the Rouge Complex including the coke oven area drains to the Tailrace sewer. (This drainage area is covered in a separate PIPP/SPCC Plan prepared by Rouge Steel Company).

Sanitary Drains

The sanitary drainage systems are consolidated into a single discharge point near gate 1. This then discharges to the City of Detroit Publically Owned Treatment Works (POTW).

MATERIALS

- A. Material Inventory
- B. PCB Quantities and Locations
- C. Sampling Procedures
- D. Waste Analysis & Characterization Plan
- E. Waste Identification
- F. Waste File Listing

HAZARDOUS MATERIALS INVENTORY

Material (Ford Tox No.)	Storage Container	Capacity # (Gals)	Location	Dike	(A) Spill Potential	(B) Delivery of Material to Storage	(C) Dispersal of Material from Storage
Schaefer Road Wastewater Facility							
Recycled Oil (032810)	UTank	2 10,000	Primary Lagoon	No	(1)	(1)	(1)
Recycled Oil (032810)	UTank	1 4,000	Primary Lagoon	No	(1)	(1)	(1)
Recycled Oil (032810)	UTank	1 4,000	Secondary Lagoon	No	(1)	(1)	(1)
Recycled Oil (032810)	Tank	1 4,000	Oil House, 2nd Floor	No	--	--	--
Recycled Oil (032810)	Tank	2 15,000	Oil House, Skim Tanks	No	(1)	(1)	(1)
Recycled Oil (032810)	Tank	1 4,000	Sludge Ponds	No	(1)	(1)	(1)
Coagulant Polymer (020270)	Tank	1 1,200	Lift Pump Station	Yes	--	(2)	(2)
Flocculent Polymer (025599)	Tank	1 1,550	Polymer Feed Station	Yes	--	(2)	(2)
North Rouge Wastewater Facility							
Recycled Oil (032810)	Tank	2 4,000	Oil Reclaim System	Yes	--	(1)	(1)
Oil - Water (032810)	Tank	1 10,000	Oil - Water Separator System	No	(2)	(3)	(3)
Boat Slip							
Recycled Oil (032810)	Tank	2 4,000	Oil Reclaim System	No	(3)	(1)	(1)
Construction Services Building							
Unlead Gasoline (018816)	Tank	2 60	Fueling Station	No	(4)	(4)	(4)
Diesel Fuel (000420)	Tank	2 60	Fueling Station	No	(4)	(4)	(4)
Road Salt (008084)	Concrete	1 150 Tons	Gate - 8	No	(5)	(5)	(5)
DAP - Wastewater Pretreat. Plant							
Ferric Chloride (005248)	Tank	1 10,000	Chemical Bulk Storage Area	Yes	--	(6)	(6)
Sodium Hydroxide (005250)	Tank	1 10,000	Chemical Bulk Storage Area	Yes	--	(6)	(6)
Sulfuric Acid (023433)	Tank	1 6,000	Chemical Bulk Storage Area	Yes	--	(6)	(6)
Transportation Services Building							
Freeze (007486)	Tank	2 500	Garage Area	No	(7)	(7)	(7)
Lt. Wt. Motor Oil (022924)	Tank	2 750	Garage Area	No	(7)	(2)	(7)
Hvy Wt. Motor Oil (022470)	Tank	2 500	Garage Area	No	(7)	(2)	(7)
Recycled Oil (032809)	Tank	1 500	Garage Area	No	(7)	(8)	(1)
Lt. Wt. Motor Oil (022924)	Tank	1 500	Truck Wash Building	No	(5)	(2)	(8)
Regular Gasoline (not used)	UTank	1 4,000	Truck Fueling Station	No	(6)	(2)	(8)
Diesel Fuel (000420)	UTank	2 25,000	Truck Fueling Station	No	(6)	(2)	(8)
Gasoline (018816)	UTank	1 25,000	Truck Fueling Station	No	(6)	(2)	(8)
Hvy Wt. Motor Oil (022470)	Tank	1 250	Truck Fueling Station	No	(6)	(2)	(8)
North Yard Locomotive Fueling Sta.							
20/30W Crane Oil (006817)	Tank	2 1,000	Tank Farm	Yes	--	(2)	(9)
Diesel Fuel (000420)	UTank	1 5,000	Locomotive Fueling Station	No	(5)	(2)	(10)
Diesel Fuel (000420)	UTank	1 10,000	Locomotive Fueling Station	No	(5)	(2)	(10)
Journal Oil (001895)	Tank	2 500	Tank Farm	No	(5)	(2)	(7)
Journal Oil (001895)	Tank	2 250	Tank Farm	No	(5)	0	(7)
Recycled Oil (032810)	UTank	1 10,000	Tank Farm	No	(5)	(9)	(11)
Recycled Oil (032809)	Tank	1 1,000	Tank Farm	Yes	--	--	--

HAZARDOUS MATERIALS INVENTORY

Material (Ford Tox No.)	Storage Container #	Capacity (Gals)	Location	Dike	(A) Spill Potential	(B) Delivery of Material to Storage	(C) Dispersal of Material from Storage
South Yard Locomotive Fueling Sta.							
Diesel Fuel (000420)	Tank	1 12,000	Locomotive Fueling Station	Yes	(5)	(2)	(10)
Diesel Fuel (000420)	Tank	1 6,000	Locomotive Fueling Station	Yes	(5)	(2)	(10)
Heavy Equipment Repair Building							
10W Crane Oil (006555)	Tank	3 500	Locomotive Repair Area	No	(7)	(2)	(7)
20/30W Crane Oil (006817)	Tank	1 500	Locomotive Repair Area	No	(7)	(2)	(7)
40W Locomotive Oil (022120)	Tank	1 500	Locomotive Repair Area	No	(7)	(2)	(7)
20/30W Crane Oil (006817)	Tank	3 250	Locomotive Repair Area	No	(7)	(2)	(7)
Recycled Oil (032809)	Tank	1 2,000	D-Section	Yes	--	(10)	(1)
Locomotive Lube Oil (022120)	Tank	2 1,000	D-Section	Yes	--	(2)	(12)
Antifreeze (007486)	Tank	1 250	Drum Storage Area	No	(7)	(7)	(7)
Transmission Fluid (009511)	Tank	1 250	Drum Storage Area	No	(7)	(7)	(7)
Railroad Offices							
Heating Fuel Oil (000420)	Tank	1 250	Interchange	No	(5)	(2)	(13)
Heating Fuel Oil (000420)	Tank	1 250	Scale No. 1	No	(5)	(2)	(13)
Heating Fuel Oil (000420)	Tank	1 250	Scale No. 2	No	(5)	(2)	(13)

NOTES:

1. "Material" means the common name of the substance stored in each container.
2. "Storage Container" means the type of container used to store the material.
3. "#" means the number of containers.
"Capacity" means the capacity of each container.
"Location" means the location of each container.
6. "Dike" means secondary containment is employed.
7. (A), (B), and (C) see pages 4, 5, and 6.
8. "UTank" means underground tank.

(A)
SPILL POTENTIAL

1. Material if spilled would go to oil polishing lagoon where material would collect behind oil retention booms and be skimmed by oil recovery units.
2. Material if spilled would go to access ramp where material would collect inside dike and would be removed by licensed vendor.
3. Material would go to area behind oil retention booms in Boat Slip and be skimmed.
4. Material if spilled during dry weather would go via interceptor sewer to the North Rouge Wastewater Facility where material would be skimmed. Material if spilled during wet weather would go to area behind oil retention booms in Boat Slip and be skimmed.
5. Material if spilled could possibly reach a watercourse.
6. Material if spilled would go to 12A facilities where material would collect behind oil retention booms and would be removed by licensed vendor.
7. Material if spilled would be contained inside building and would be removed by licensed vendor.
8. Material if spilled from container would be completely contained within the storage areas secondary containment.
 - A. Material if spilled during loading/unloading operations would be completely contained within the storage areas secondary containment.
 - B. Material if spilled during loading/unloading operations would enter the sanitary sewer.
 - C. Material if spilled during loading/unloading operations would enter the storm sewer.
 - D. Material if spilled during loading/unloading operations would enter the soil and possibly the groundwater.

(B)
DELIVERY OF MATERIAL TO STORAGE

1. Floatable (free and non-emulsified) oil is skimmed and stored in tanks prior to recycling.
2. Material is received from vendor by tank truck and pumped into storage tank.
3. Floatable (free and non-emulsified) oil is skimmed from treatment tanks and is fed to 10,000 gallon storage tank for additional oil-water separation.
4. Fuel is received daily by tank truck and pumped into storage tanks.
5. Bulk road salt is delivered by vendor semi-truck in shipments of 500 - 1,000 tons.
6. Material is delivered by chemical vendor tank truck in volumes of 3,000 - 4,000 gallons and is pumped into bulk chemical storage tanks.
7. Material is delivered by vendor in 55-gallon drums and pumped into storage tanks.
8. Used crankcase oil is pumped from drip pans into tank and stored prior to recycling.
9. Washwater with tramp oil from railroad car maintenance and cleaning operation is pumped from sump pit into storage tank.
10. Used oils from various locomotive and heavy equipment repair locations are pumped from a 250 gallon portable service tank into subject storage tank.

(C)
DISPERSAL OF MATERIAL FROM STORAGE

1. Reclaimed used oil is removed from storage tank by vendor tank truck and sold for net gain.
2. Liquid polymer is fed as dilute solution in the daily treatment of wastewater.
3. Reclaimed used oil is pumped from oil-water separator to storage tank and/or tank truck and sold for net gain.
4. Daily fuel station dispersal by hand pump to tractors and front end loaders.
5. As required for snow and ice removal. Salt is loaded into tractor towed salt spreaders or into dump trucks equipped with tailgate salt spreaders.
6. Compressed air transfer to day tank used to feed metered amounts to batch tanks during treatment of wastewater.
7. Material is used daily in hand carried volumes.
8. Daily fuel station dispersal at metered pump to plant vehicles or by mobile tank truck.
9. Material is pumped through direct feed lines from storage tanks to gondola repair building.
10. Daily fuel station dispersal by metered pump to locomotives.
11. Reclaimed tramp oil is removed from storage tank by vendor tank truck and transported to the Schaefer Road Wastewater Facility for additional oil-water separation.
12. Oil is gravity piped into D-49 oil service depot to fill 220 gallon pump truck for servicing locomotive equipment at track pits.
13. Oil is used to heat building.

PCB QUANTITIES AND LOCATIONS

All PCB transformers and capacitors in the Rouge area are covered in a separate PIPP/SPCC Plan prepared by Rouge Steel Company, for more information please call G. Doroshewitz at 313/323-1260.

SAMPLING PROCEDURES

Sampling of hazardous wastes is conducted for different purposes. In most instances, it is performed to determine compliance with existing regulations promulgated by the different regulatory agencies. In some cases, it is conducted to obtain data for purposes of classifying, treating, recovering, recycling, or determining compatibility characteristics of the wastes. Sampling is also conducted as an important part of research activities.

In general, sampling of hazardous wastes requires the collection of adequate sized, representative samples of the body of wastes. Sampling situations vary widely and therefore no universal sampling procedure can be recommended. Rather, several procedures are outlined for sampling different types of wastes in various states and containers.

These procedures require a plan of action to maximize safety of sampling personnel, minimize sampling time and cost, reduce errors in sampling, and protect the integrity of the samples after sampling. The following steps are essential in this plan of action:

1. Research background information about the waste.
2. Determine what should be sampled.
3. Select the proper sampler.
4. Select the proper sample container and closure.
5. Design an adequate sampling plan that includes the following:
 - a) Choice of the proper sampling point.
 - b) Determination of the number of samples to be taken.
 - c) Determination of the volumes of samples to be taken.
6. Observe proper sampling precautions.
7. Handle samples properly.
8. Identify samples and protect them from tampering.
9. Record all sample information in a field notebook.
10. Fill out chain of custody record.
11. Fill out the sample analysis request sheet.
12. Deliver or ship the samples to the laboratory for analysis.

WASTE ANALYSIS PLAN
TRANSPORTATION AND ROUGE SERVICES

Waste Name:	Recycled Oil	WWT Sludge Solvents	Spent	Waste Paint Solvents	Recycled
Waste No.:	D00*	N/H	F001	D001	D001
Characteristic:	EP Toxic	Non-Haz	Toxic	Ignitable	Ignitable
Test Parameter(s):	Metals Cyanide/ Sulfide Flash Point pH	Metals Cyanide/ Sulfide Flash Point pH	Metals Cyanide/ Sulfide Flash Point pH	Metals Cyanide/ Sulfide Flash Point pH	Metals Cyanide/ Sulfide Flash Point pH
Sample Method:	Composite	Composite	Grab	Composite	Composite
Test Frequency:	Annual	Annual	Annual	Annual	Annual
Storage Container(s):	Bulk Tank(s) Container(s)	Lagoon(s) &	Drum(s)	Drum(s)	Drum(s)

WASTE CHARACTERIZATION PLAN

Physical Characteristics:

Color
 Physical State @ 25 C
 Percent Solids
 Ignitability: Flash Point F
 Corrosivity pH
 Reactivity (Cyanide or Sulfide bearing waste)
 HCN ppm
 H2S ppm

Inorganic Analysis

Metals - EP Toxicity Test (40CFR.261)
 Arsenic Selenium
 Barium Silver
 Cadmium Copper (MI)
 Chromium Nickel (FMC)
 Lead Zinc (MI)
 Mercury

Total Toxic Organics

Volatile Organic Compounds
 Purgable Halocarbons
 Purgable Aromatic Hydrocarbons
 Base Neutral Extractables
 Chlorinated Hydrocarbon
 PCB's
 OC Pesticides
 Phthlates
 PNA
 Acid Extractables
 Phenols

**WASTE IDENTIFICATION
TRANSPORTATION AND ROUGE SERVICES**

Wastes generated at Transportation and Rouge Services locations have been characterized to assure appropriate transportation, treatment, storage, and/or disposal. In many cases, hazardous waste treatment/storage/disposal facilities (TSDF) require this characterization prior to acceptance of any wastes. Each waste stream must be sampled, analyzed and evaluated yearly. The following list identifies each waste, location, and characterization:

<u>Waste Name</u>	<u>Location</u>	<u>Characterization</u>
Recycled Oil	BS Tanks #3 & 4	EP Toxic, Pb & Cr
Recycled Oil	NRWTP Tanks #1 & 2	Non-hazardous
Recycled Oil	N. Yrd. Loco. Fuel Sta. - Tramp Oil Tank	Non-hazardous
Recycled Oil	SRWF Oil Storage Tanks	Non-hazardous
Recycled Oil	Hvy. Equip. Rpr. Bldg. - Scrap Oil Tank	EP Toxic, Pb & Zn
Recycled Oil	TSB Scrap Oil Tank	EP Toxic, Pb & Zn
WWT Sludge	DAP-WPF Filter Cake	Non-hazardous
WWT Sludge	SRWF Dike Lagoon	Non-hazardous
WWT Sludge	12A Lagoon	Non-hazardous
WWT Sludge	NRWTP	Non-hazardous
Spent Solvent	Hvy. Equip. Rpr. Bldg. - Degreasing	Toxic, F001
Waste Paint	CSB	IGN., D001
Waste Paint	TSB	IGN., D001
Recycled Solvent	TSB - (Safety Kleen)	IGN., D001
Recycled Solvent	CSB - (Safety Kleen)	IGN., D001
Recycled Solvent	Hvy. Equip. Rpr. Bldg. - (Safety Kleen)	IGN., D001

WASTE FILE LISTING

Waste Number

T&RS-1

Waste Name	Waste Oils	DOT Shipping Name	Waste Oil, N.O.S.
DOT Hazard Class	Combustible Liquid	EPA ID Number	
Waste Type	Non-Hazardous-Tested	Special Handling	Avoid Skin Contact
Waste Character	Petroleum Oil	Description	Waste Oil (Excluding gasoline, crankcase, oils)
Disposal Method	Recycle	Form	Liquid
Density	7.5 P/G	State ID Number	021L
DOT ID Number	NA1270		

T&RS-2

Waste Name	Paint	DOT Shipping Name	Waste Paint
DOT Hazard Class	Combustible Liquid	EPA ID Number	D001
Waste Type	Hazardous-Tested	Special Handling	Avoid Skin Contact
Waste Character	Paint & Lacquer	Thin	Description - Paint and Lacquer Thinners along with paint wastes
Disposal Method	Incinerate	Form	Liquid
Density	11.4 P/G	State ID Number -	
DOT ID Number	UN1263		

T&RS-3

Waste Name	Used Motor Oils	DOT Shipping Name	Waste Oil, N.O.S.
DOT Hazard Class	Combustible Liquid	EPA ID Number	D007 Door
Waste Type	Hazardous-Tested	Special Handling	Avoid Skin Contact
Waste Character	Petroleum Oil	Description	Used Motor Oil (Gasoline, crankcase)
Disposal Method	Recycle	Form	Liquid
Density	7.5 P/G	State ID Number	
DOT ID Number	NA1270		

-4

Waste Name	Trichloroethane	DOT Shipping Name	Waste, 1,1,1-Trichloroethane ORM-A
DOT Hazard Class	ORM-A	EPA ID Number	F001
Waste Type	Hazardous-Listed	Special Handling	Do not in hale
Waste Character	Halogenated Solvent	Description	Used in degreasing operations
Disposal Method	Recycle	Form	Liquid
Density Method	10.3 P/G	State ID Number	
DOT ID Number	UN2831		

T&RS-5

Waste Name	Petroleum Naphtha	DOT Shipping Name	Waste Petroleum Naphtha
DOT Hazard Class	Combustible Liquid	EPA ID Number	D001
Waste Type	Hazardous-Tested	Special Handling	Avoid Skin Contact
Waste Character	Petroleum Distillate	Description	Used in degreasing operations
Disposal Method	Recycle	Form	Liquid
Density	6.6 P/G	State ID Number	
DOT ID Number	UN1255		

T&RS-6

Waste Name	Diesel Fuel	DOT Shipping Name	Waste Fuel Oil
DOT Hazard Class	Combustible Liquid	EPA ID Number	D001
Waste Type	Hazardous-Tested	Special Handling	Avoid Skin Contact
Waste Character	Petroleum-Crude Oil	Description	
Disposal Method	Recycle	Form	Liquid
Density	7.2 P/G	State ID Number	
DOT ID Number	NA1993		

NOTIFICATION

- A. Notification Procedure
 - 1. Notification Requirements
 - 2. Information Required for Notification
 - 3. Federal Notification
 - 4. State Notification
 - 5. Local Notification
- B. Phone Lists
 - 1. Emergency Call List
 - 2. Transportation and Rouge Services Personnel Listing
 - 3. Local Emergency Response Units
 - 4. Ford Corporate Contacts
 - 5. Governmental Contacts
 - 6. Emergency Information Services
 - 7. Emergency Assistance Contractors
 - 8. Licensed Service Contractors
- C. Agreements with Local Emergency Response Units
 - 1. Local Emergency Planning Commission
 - 2. Police
 - 3. Fire
 - 4. Disaster Medical Communication
- D. Agreements with Plants in Rouge Complex

NOTIFICATION REQUIREMENTS

The release of oils or hazardous substances in reportable or harmful quantities to the environment (air, land, water) requires the immediate notification of federal, state, and/or local agencies. Written reports are also required and are not covered by this emergency plan.

Before reporting any of the following situations be sure to obtain as much of the information asked for on tab four, page three, as possible.

INFORMATION REQUIRED FOR NOTIFICATION

Every effort should be made to obtain the following information before placing a call to an agency. However, in the interest of a speedy notification some things (e.g. quantity spilled) may have to be estimated. Note: Containment of the spill/release is of the utmost importance. Containment should be implemented immediately, before notification. Do not indiscriminately flush spilled materials down the drain.

1. Name of facility: _____
2. Name of person Reporting: _____
3. Address of facility: _____
4. Phone number of person reporting: _____
5. Exact location of spill/releases: _____
6. Type (name) of material released: _____
7. Oil____, Salt____, Flammable____, Hazardous____, PCB____,
Extremely Hazardous____, State/Local Critical Material____
8. Quantity of material released: _____
9. Source of the released material: _____
10. Cause of the release (fire, spill, etc.): _____
11. Name of the body of water involved, or the nearest body of
water: _____
12. Action(s) taken for containment and/or cleanup: _____
13. Estimate of quantity recovered: _____
14. The extent of injuries, if any: _____
15. Time and date of the incident: _____
16. The possible hazards to human health, or the environment,
outside the facility: _____
17. Medical Precautions/Advice _____

Notes: _____

Agencies contacted:

AGENCY	NAME, OR NUMBER, OF OPERATOR	TIME OF CALL
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

FEDERAL NOTIFICATION

OIL: Report spills into or upon the "navigable waters of the United States" or adjoining shorelines within 48 hours to:

United States Coast Guard, Washington, DC
National Response Center
800/424-8802
202/426-2675

NOTES:

1. "Navigable waters of the United States" include all surface waters."
2. "Oil" means oil of any kind or in any form including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with other than dredged spoil [see 40 CFR 110.1(a)].
3. If direct reporting to the NRC is not practicable, reports may be made to:

U.S. Coast Guard District No. 9
(predesignated OSC, water)
216/522-3919

or

EPA Region V, (predesignated OSC, land)
312/353-2000
312/353-2318

4. If it is not possible to notify the NRC or the predesignated OSC immediately, reports may be made immediately to the nearest Coast Guard unit, (provided that you notify the NRC as soon as possible):

U.S. Coast Guard (Day Unit)
Marine Safety Office
313/226-7777

U.S. Coast Guard (Night and Weekend Unit)
Group Detroit Operations Center
313/226-6870

FEDERAL NOTIFICATION

HAZARDOUS SUBSTANCES: Report any "release" equal to or exceeding the "reportable quantity" in any 24-hour period into the "environment" to:

United States Coast Guard, Washington, DC
National Response Center
800/424-8802
202/426-2675

NOTES:

1. "Release" means any spilling leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment.
2. "Reportable quantities" of hazardous substances can be found at 40 CFR 302 (Table 302.4).
3. "Environment" means all surface and groundwater, land surface, or subsurface strata and ambient air within the United States or under the jurisdiction of the United States.

FEDERAL NOTIFICATION

EXTREMELY HAZARDOUS SUBSTANCES: Report any "release" in excess of its reportable quantity causing exposure to persons outside facility boundaries to:

United States Coast Guard, Washington, DC
National Response Center
800/424-8802
202/426-2675

NOTES:

1. "Release" means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment.
2. "Reportable quantities" of extremely hazardous substances can be found at 40 CFR 355.

FEDERAL NOTIFICATION

HAZARDOUS WASTES: Report any "release" from a treatment, storage, or disposal facility equal to or exceeding the "reportable quantity" into the "environment" to:

United States Coast Guard, Washington, D.C.
Nation Response Center
800/424-8802
202/426-2675

NOTES:

1. "Reportable quantities" for hazardous substances which when released to the environmental and become hazardous wastes and "reportable quantities" of unlisted hazardous wastes can be found at 40 CFR 302 (Table 302.4).

2. A hazardous waste generator is exempt from having to file a written 15-day incident report as long as he or she is engaged in treatment or containment activities during an immediate response to:

- a. a discharge of hazardous waste.
- b. an imminent and substantial threat of a discharge of hazardous waste, and/or
- c. a discharge of a material which, when discharged, becomes a hazardous waste.

FEDERAL NOTIFICATION

HAZARDOUS MATERIALS: Report transportation-related (including loading, unloading, and temporary storage) incidents in which as a direct result of "hazardous materials" the following occurred to:

United States Coast Guard, Washington, DC

National Response Center
808/424-8802
202/426-2675

NOTES:

1. "Hazardous materials" are listed under 49 CFR 172.101.
2. Report incidents in which:
 - a. a person is killed
 - b. a person receives injuries requiring his hospitalization
 - c. estimated carrier or other property damage exceeds \$50,000
 - d. fire, breakage, spillage, or suspected radioactive contamination occurs involving shipment or radioactive material
 - e. fire, breakage, spillage, or suspected contamination occurs involving shipment of etiological agents.
Notice may be given to the Director, Center for Disease Control, U.S. Public Health Service, 404/633-5313, in lieu of notifying the NRC.
 - f. A situation exists of such a nature that, in the judgement of the carrier, it should be reported, even though it does not meet the criteria of a. through c.

FEDERAL NOTIFICATION

EXCESS AIR EMISSIONS: Refer to notes.

NOTES:

1. Releases of hazardous air pollutants are subject to the same reporting requirements as hazardous wastes above.
2. "Exception": Hazardous air pollutant releases covered by NESHAP semiannual and special reporting requirements.
3. The only applicable special reporting requirement under NESHAP is for "Vinyl Chloride" relief valve discharges. Within 10 days of any relief valve discharge (except for emergency relief discharge), a written report must be submitted to the EPA Region V Administrator.

STATE NOTIFICATION

OIL, SALT, OR POLLUTING MATERIALS: Report spills into the "waters of the state" to:

Michigan Department of Natural Resources, Lansing
Environmental Protection Bureau
800/292-4706 (in state)
517/373-7660

NOTES:

1. "Oil" means oil of any kind or in any form including, but not limited to, petroleum, fuel oil, gasoline, grease, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.
2. "Salt" means sodium chloride and calcium chloride in solid or liquid form.
3. "Polluting Material" means any substance listed on the Michigan Critical Materials Register (see Michigan Water Resource Commission, DNR, Part 5 Rules).
4. "Waters of the state" include surface and subsurface waters within or bordering upon the state.

HAZARDOUS SUBSTANCES: Report any spill or release to the environment of a hazardous substance in an amount greater than the reportable quantity (or greater than one pound, if no reportable quantity has been designated), to:

State Emergency Response and Emergency Planning Commission
517-373-2329

EXTREMELY HAZARDOUS SUBSTANCES: Same as Hazardous Substances.

HAZARDOUS WASTES: Same as Oil, Salt, or Polluting Materials

HAZARDOUS MATERIALS: Same as Oil, Salt, or Polluting Materials

EXCESS AIR EMISSIONS: Same as Oil, Salt, or Polluting materials or call:

Michigan Department of Natural Resources, Lansing
Air Quality Division
517/322-1330 (8 to 4:30)

STATE NOTIFICATION

WASTEWATER EXCURSIONS: Report excursions exceeding any daily maximum effluent limitation within 24 hours or 5 days to:

Michigan Department of Natural Resources, Northville
Surface Water Quality Division
313/344-9460

NOTES:

1. Report verbally any excursion that may endanger human health and/or the environment within 24 hours; if the district office cannot be contacted, notify the 24-hour number for oil spills. A written submission shall also be provided within 5 days to the agency specified under Oil, Salt, or Polluting Materials.

UNDERGROUND TANK LEAKS: Same as Oil, Salt, or Polluting Materials.

LOCAL NOTIFICATION

OIL: Report any oil or petroleum product spill into the sewer which may involve a risk of fire or explosion to:

Detroit Water and Sewer Systems Control Office
224-4775

NOTES:

1. If direct reporting to Detroit Water and Sewer Systems Control Office is not practicable, reports may be made to:

Civil Preparedness Office
943-2841 or 943-2100

HAZARDOUS SUBSTANCES: Report any spill or release to the environment of a hazardous substance in an amount greater than the reportable quantity (or greater than one pound, if no reportable quantity has been designated), to:

Wayne County Central Communications Office, Detroit
942-2222, and

Dearborn Fire Department
943-2100

EXTREMELY HAZARDOUS SUBSTANCES: Same as Hazardous Substances

HAZARDOUS WASTES: Same as Hazardous Substances

HAZARDOUS MATERIALS: Same as Hazardous Substances

EXCESS AIR EMISSIONS: Same as Hazardous Substances or call:

Wayne County Air Pollution Control Office
274-3366

EMERGENCY CALL LIST

Ford personnel in the Rouge Area are instructed to immediately contact Plant Security to report all spill incidents. The Plant Security Office is manned 24 hours per day, 365 days per year, and maintains an up-to-date emergency call list. Rouge Area activities advise Plant Security of changes to the emergency call list as they occur.

A plant Designated Environmental Representative has been assigned overall responsibility in coordinating responses to pollution incidents. He is the person Security has instructions to immediately contact in the event of a spill. He in turn instructs Security officers to make contact with others listed on the following emergency call list as appropriate.

1. Plant Security

Ford Motor Company - Rouge Manufacturing Complex
1001 Rouge Office Building
3001 Miller Road
Dearborn, Michigan 48121
Day or night: (313)32-23211 or 32-27690

2. W. B. Dotterrer

Environmental Engineering Supervisor
Designated Environmental Representative
Designated Emergency Coordinator and
Emergency Response Coordinator
Office: (313)594-1014
Home: (313)360-0819

3. J. P. Miltz

Environmental Engineer
Alternate Emergency Coordinator and
Emergency Response Coordinator
Office: (313)323-0882
Home: (313)453-0948

It is the responsibility of the Designated Environmental Representative to make contact with appropriate Company supervisory personnel in the event of an accidental discharge of pollutants.

The Emergency Coordinator reports to the Construction and Environmental Services Manager and in the event of an incident, also to the Compliance and Liaison Department, Stationary Source Environmental Control Office; and to the Plant Engineering Office on SPCC/PIPP matters. Support is also available from these offices as required.

TRANSPORTATION AND ROUGE SERVICES PERSONNEL LISTING

The Emergency Coordinator has been assigned responsibility for coordinating all emergency responses to pollution incidents. The Emergency Coordinator is thoroughly familiar with all aspects of the contingency plan. In addition, this individual has authority to commit the resources needed to carry out the contingency plan and serve as the principle liaison for the Company to Federal and State regulatory agencies.

For spills occurring during the day (No. 2) shift, Monday through Friday, notify one of the following individuals:

	<u>Office</u>	<u>Home</u>
W. B. Dotterrer, Emergency Coordinator	59-41014	(313)360-0819
J. P. Miltz, Alt. Emergency Coordinator	32-30882	(313)453-0948
C. S. Ozar, Environmental Engineer	32-30883	(313)477-3123
S. Dolan, Environmental Engineer	32-30883	(313)668-8956
R. B. Schwartz, Environmental Engineer	32-30883	(313)238-3028
F. D. Vitale, Environmental Engineer	32-30883	(313)547-9387
W. Schauwecker, Mgr., Const. & Env. Svcs.	32-29495	(313)455-5359
R. Major, Manager, Trans. & Rge. Svcs.	59-46964	(313)851-4215

For spills occurring during the off shifts, weekend and holidays, notify the Environmental Control Engineer on duty at the North Rouge Wastewater Facility (33-79794), the Schaefer Road Wastewater Facility (33-74062), or DAP Wastewater Facility (33-71061). If unable to make contact with the engineer, call one of the individuals listed above.

LOCAL EMERGENCY RESPONSE UNITS

AGENCY	CONTACT NAME	PHONE
Rouge Fire and Security Department	G. Simmons	322-3313
Dearborn Fire Department	G. Polidori	943-2100
Dearborn Police Department	R. Deziel	943-2200
Wayne County Emergency Coordinator Central Communications Office	M. Sparks	942-2222
US Coast Guard Search and Rescue		1-800-321-4400
Rouge Medical Facility	Dr. Anne Williams	32-23211
Oakwood Hospital		593-7440
Michigan Department of Natural Resources State Emergency Response and Emergency Planing Commission	D. Hales	1-517-373-2329
Detroit Water and Sewer Systems Control Center		224-4775

FORD CORPORATE CONTACTS

OFFICE	NAME	PHONE
Stationary Source Environmental Control Office (SSECO)		
Hotline		59-40324
Hazardous Waste Spill Coordinator	J. Amber	32-24646
Oil & Polluting Material Spills	F. P. Nixon	32-23716
Plant Engineering Office (PEO)		
Environmental Control Manager	S. Vaughn	32-21600
Chemistry	P. Lawrence	32-23753
Facility Design	B. Silversen	32-23761
Corporate Insurance Office		
	C. A. Duncan	32-29762
	D. H. Mailing	32-25401
Radiation & Health Office		
	D. A. Greschaw	59-46955

GOVERNMENTAL CONTACTS

AGENCY	PHONE
National Response Center	1-800-424-8802
or	1-202-426-2675
State Response Center	1-800-292-4706
US Coast Guard	226-7777
US EPA, Region V (OSC Land)	676-6500
Michigan Department of Natural Resources	344-4670

EMERGENCY INFORMATION SERVICES

Unit: CHEMTREC, Chemical Transportation Emergency Center
Manufacturing Chemists Association, Washington, D.C.
Emergency Number: 1-800-424-9300 (24 hour hot line)
Emergency Number: 1-202-483-6126 (Administrative)
1-202-483-7616

Unit: HMIX, Hazardous Materials Information Exchange, Sponsored by
DOT's Research and Special Programs Administration and the
Federal Emergency Management Agency
Emergency Number: 1-800-PLANFOR
Modem: 1-312-972-3275 (300, 1200, 2400 baud)

EMERGENCY ASSISTANCE CONTRACTORS

Company Name:Marine Pollution Control
Service Provided:Spill Clean-up, Hauler
EPA No.:MID 049 277 718
Licensed Under:Act 136/Act 64
Emergency Number:1-313-849-2333

Company Name:Doetsch Industrial Services, Inc.
Service Provided: Spill Clean-up, Hauler
EPA No.: MID 004 914 032
Emergency Number:1-313-368-9161
Licensed Under:Act 136/Act 64

LICENSED SERVICE CONTRACTORS

Company Name:Edward's Oil
Service Provided:Oil Reclaim
EPA No.:MID 088 754 668
Licensed Under:Act 136/Act 64
Contact Name:Tom Kosh
Phone Number:1-313-841-2265

Company Name:Safety Kleen Corp.
Service Provided:Solvent Recovery
EPA No.:MID 000 722 694
Licensed Under: Act 136/Act 64
Contact Name: Ronald Conrad
Phone Number:1-312-697-8460

Company Name:Wayne Disposal Inc.
Service Provided:Secure Landfill - Non-hazardous Waste
EPA No.:MID 048 090 633
Licensed Under:RCRA/TSDF
Contact Name: David Lusk
Phone Number:1-313-326-0200

Company Name:Michigan Disposal Inc.
Service Provided:Treatment/Secure Landfill - Hazardous Waste
EPA No.:MID 000 724 831
Licensed Under:RCRA/TSDF
Contact Name: David Lusk
Phone Number:1-313-326-0200

Company Name:Allen Park Clay Mine
Service Provided:Secure Landfill - Non-Hazardous Waste thru 7/31/88
EPA No.:MID 270 010 093
Licensed Under:RCRA/TSDF
Contact Name: David Miller
Phone Number:322-0700

AGREEMENTS WITH LOCAL EMERGENCY RESPONSE UNITS

Local Emergency Planning Commission (LEPC)

The Dearborn Fire Department Chief is the head of the local Emergency Planning Commission and will organize the efforts of local fire, police, rescue, traffic control, evacuations etc. The Fire Chief (313/943-2100) is to be notified by the plant in these situations:

Fire requiring outside assistance.

Accident or injury requiring outside assistance other than transportation.

Rescue operations requiring outside assistance.

Traffic control in case of riot or other civil disorder.

Disaster such as tornado, downed electrical lines, flood, etc. that may impact the local community.

Releases affecting the environment outside the plant.

NOTE: In case of substantial emergency the Fire Chief may call upon the Wayne County Emergency Coordinator (313/942-2222) for additional support.

Dearborn City Police Department

In addition to the usual police functions involving crimes the City Police will assist the plant in crowd control, rescue operations, escort etc. Most of these activities are handled through the Dearborn Fire Department (LEPC).

Dearborn City Fire Department

The City Fire Department will be called upon to fight fires and assist in rescue operations that are beyond the capacity of the plant fire brigade and/or at times when the plant is unoccupied. The Dearborn Fire Department has yearly training sessions with the plant forces. They have been trained on the location of hazardous substances (including; PCBs, flammable liquids, tank farm, hazardous wastes, etc.) as well as precautions necessary in controlling fires/releases and excess water in these areas.

Disaster Medical Communication

An emergency operation plan for handling disaster situations with multiple injuries has been devised. For more information, please see the Rouge Area Disaster Plan or contact the Fire Chief at 313/337-8000.

All of the above organizations are on the distribution list for this contingency plan and will be sent revisions as necessary.

AGREEMENTS WITH PLANTS IN ROUGE COMPLEX

In case of an oil spill on the Rouge River, we have agreed to launch our power boat and deploy boom to stop the advancement of oils. In the case of a major spill, which involves the discharge of oil or hazardous substances into or upon the waters of the state (e.g., Boat Slip, Sanitary, or Ground Water), we have agreed to coordinate emergency response measures and serve as principle liaison for the Company to Federal and State regulatory agencies.

ACTION PLANS

- A. Medium and Low-Level Spill Plan
- B. High-Level Spill Plan
- C. Emergency Equipment Listing/Location

MEDIUM/LOW-LEVEL SPILL PLAN

Phase I - Discovery and Notification

A spill may be discovered through:

- .A report submitted by a person;
- .Routine search patrols; and
- .Random or incidental observation by employees, government agencies, or the public.

After a spill is discovered, begin the notification procedure:

- All manufacturing facilities have been instructed to first contact Environmental Services during working hours and to contact Rouge Security at all other times.
- All reports of spills or discharges should be made to Plant Security if not previously relayed to the appropriate Emergency Coordinator.
- Plant Security shall promptly notify the appropriate Emergency Coordinator upon receipt of a report of a spill or pollution incident. The Emergency Coordinator shall proceed with the following phases as outlined in the Spill Plan and assist in directing off site response personnel to the spill site.
- The Emergency Coordinator shall immediately notify the National Response center at their 24 hour toll-free number, 1-800-424-8802, and State Response Center at their 24 hour toll-free number, 1-800-292-4706 when the reported spill is an actual discharge or potential release to the environment. The Emergency Coordinator shall proceed with the following phases as outlined in this Spill Plan.

The following general information should be given when reporting an incident:

- Spill location
- Spill substance
- Spill quantity
- Spill source
- Cause of spill
- Time of spill discovery
- Name of person reporting spill
- Seriousness of spill threat

IN ALL CASES INVOLVING A SPILL OF HIGHLY FLAMMABLE MATERIAL THE FIRE AND POLICE DEPARTMENTS SHALL BE NOTIFIED IMMEDIATELY.

Phase II - Preliminary assessment and initiation of action

The Emergency Coordinator is responsible for promptly initiating a preliminary assessment.

The preliminary assessment shall be conducted using available information (i.e., Material Safety and Data Sheets, Chemical Fact Sheets, Plant Specific Catalogs, etc.), supplemented by an on-scene inspection. The Emergency Coordinator shall evaluate available information and shall undertake action to:

- .Evaluate the magnitude and severity of the discharge or threat to, public health and welfare and the environment;
- .Determine the type and quantity of the polluting material and source of the discharge;
- .Assess the feasibility of removal;
- .Initiate actions to properly perform removal or eliminate the threat;
- .Ensure that adequate surveillance is given over whatever actions are initiated; and
- .Determine whether removal is properly being carried out.
Removal is proper when:
 - The clean up is fully sufficient to minimize or mitigate damage to public welfare or environmental (removal efforts are "improper" to the extent that Federal or State efforts are necessary to prevent further damage).
 - The removal efforts are in accordance with applicable regulations and guidelines, including this Plan.

Phase III - Containment, countermeasures, clean-up, and disposal.

Insure that proper safty procedures and equipment are available before beginning any spill containment or cleanup. Do not come into contact with any spilled material without proper protective equipment.

Defensive actions should begin as soon as possible to prevent, minimize, or mitigate damage to the public health or welfare or the environment. Actions may include:

- .placement of physical barriers to stop and deter the spread of further pollution;
- .analyzing water samples to determine the source and spread of oil;
- .controlling the source of discharge;
- .measuring and sampling;
- .damage control or salvage operations;
- .control of the water discharged from upstream impoundment; and
- .use of chemicals and other materials to restrain the spread of the spilled material and mitigate its effects.

Appropriate actions should be taken to recover the oil or mitigate its effects. Of the numerous chemical physical methods that may be used, the chosen methods should be the most consistent with protecting the public health and welfare and the environment.

Contaminated materials recovered in clean-up operations shall be disposed of in accordance with applicable federal, state, and local regulations.

Phase IV - Documentation

Documentation shall be collected and maintained to support all actions. In general, documentation should be:

- .Sufficient to prove the source, cause and circumstances of the incident, and
- .Impact and potential impacts to the public health and welfare and environment.

The Emergency Coordinator shall ensure the necessary collection and safeguarding of information, samples, and reports.

- .Samples and information must be gathered expeditiously during the response to ensure an accurate record of the impacts incurred.

Appropriate documentation materials and reports shall be transmitted to the appropriate government agencies and company offices for follow-up.

- .SSECO review and approval is required for written reports to government agencies, if required.
- .A written Pollution Incident Report to Michigan DNR is required within 10 days following a spill of oil, salt, or substances listed in the Michigan Critical Material Register directly or indirectly, to the surface waters or groundwaters of the state.
- .Ford Corporate Insurance requires that SSECO be notified of any release of oil or hazardous substances within seven days of the commencement of the event/release. Our insurance policy also states that the Company must commence immediate remedial efforts within 48 hours of the release.

HIGH-LEVEL SPILL PLAN

Phase I - Discovery and Notification

A spill may be discovered through:

- .A report by the person in charge of a vessel or facility;
- .Routine search by patrols;
- .Random or incidental observation by employees, government agencies, or the public.

After a spill is discovered, begin the notification procedure:

- All manufacturing facilities have been instructed to first contact Environmental Services during working hours and to contact Rouge Security at all other times.
- All reports of spills or releases should be made to Plant Security if not previously relayed to the appropriate Emergency Coordinator.
- Plant Security shall promptly notify the appropriate Emergency Coordinator upon the receipt of a report of a spill or pollution incident. The Emergency Coordinator shall proceed with the following phases as outlined in this Spill Plan and assist in directing off site response personnel to the spill site.
- The Emergency Coordinator shall immediately notify the National Response Center at their 24 hour toll-free number 1-800-424-8802, and State Response Center at their 24 hour toll-free number, 1-800-292-4706 as soon as he has knowledge of a spill or release of a hazardous substance in the amount equal to or greater than the reportable quantity determined by CERCLA (40 CFR 302.4). The Emergency Coordinator shall proceed with the following phases as outlined in this Spill Plan.

The following general information should be given when reporting an incident:

- Spill location
- Spill substance
- Spill quantity
- Spill source
- Cause of spill
- Time of spill discovery
- Name of person reporting spill
- Seriousness of spill threat

IN ALL CASES INVOLVING A SPILL OF HIGHLY FLAMMABLE MATERIAL THE FIRE AND POLICE DEPARTMENTS SHALL BE NOTIFIED IMMEDIATELY.

Phase II - Preliminary Assessment

The Emergency Coordinator should make the preliminary assessment as soon as possible to determine whether the release requires immediate removal. The Emergency Coordinator should base the assessment on the most readily available information, which may include:

- .The magnitude of the hazard;
- .An identification of the release source and nature;
- .The identification of private firms that are willing to undertake response assistance;
- .Determine whether immediate removal is necessary.

A preliminary assessment of hazardous waste releases may entail a review of site management practices, analysis of photographs, literature searches, and personal interviews conducted as appropriate.

The Emergency Coordinator should conclude the preliminary assessment when the investigation reveals;

- .That there is no release at the site;
- .The release is not a hazardous substance or containment that may pose a danger to health or the environment;
- .The amount released does not exceed a reportable quantity;
- .The assessment is completed.

Phase III - Immediate Removal

When the Emergency Coordinator determines that immediate removal is essential to prevent risk to human life or health, immediate removal actions should be taken as soon as possible. These actions may include:

- .Collecting and analyzing samples to determine the source and dispersion of the hazardous substance release;
- .Providing alternative water supplies;
- .Installing security fencing or other measures to limit access;
- .Controlling the source of the release;
- .Moving hazardous substances to a RCRA - approved hazardous waste treatment, storage, or disposal facility;
- .Erecting physical barriers to stop the release from spreading;
- .Controlling the water discharge from an upstream impoundment;
- .Recommending evacuation of local populace to appropriate authorities if necessary to safeguard human health;
- .Using chemicals to retard the substances spread and lessen its effect;
- .Executing damage control or salvage operations.

If the Emergency Coordinator or lead agency determines that the release may require planned removal (short term) or remedial action (long term) the OSC may initiate, either simultaneously, or sequentially, Phase IV or V as appropriate.

Phase IV - Determination of Appropriate Response

The lead agency should consider the following engineering techniques, when appropriate:

.Air Emissions Control - Control of volatile gaseous compounds should address both lateral movement and atmospheric emissions. Before gas migration control can be properly installed, field measurements must be taken to determine gas concentrations, and pressures. Typical emissions control techniques include:

- Pipe vents;
- Trench vents;
- Gas barriers;
- Gas collection systems, and;
- Overpacking.

.Surface Water Controls - These remedial techniques are designed to reduce waste infiltration and control runoff. They also reduce erosion and stabilize surface areas. Some typical surface water control technologies includes:

- Surface seals;
- Surface water diversion and collection systems such as dikes and berms;
- Grading, and
- Re-vegetation.

.Ground Water Controls - Ground water contamination can be a particularly expensive and time consuming problem. Some ground water control techniques that might be applied to contaminated aquifers include:

- Impermeable barriers such as slurry walls, grout curtains, sheet pilings, permeable treatment beds, and plume containment.
- Leachate control systems should be used for surface and groundwater seepage. Some leachate collection systems include a series of drains that intercept the leachate and channel it to a sump, a wet well, or some other appropriate discharge point.

.Contaminated Water and Sewer - Sewers and municipal water mains down-gradient from hazardous waste disposal sites may become contaminated by leachate or polluted groundwater through cracks, ruptures, or poorly sealed pipe joints. Technologies applicable to contaminated water mains and sewer lines include:

- Grouting;
- Pipe relining and sleeving, and
- Sewer relocation.

Available on-site technology:

.A large number of waste treatment technologies are waste specific. There are very few, if any, treatment technologies that are effective for every type of hazardous waste. The actual use or implementation depends on waste properties and characteristics and may combine several options in any application. These technical options with typical examples applications fall into five categories, which are:

-Physical treatment options:

*Filtration - separates solids and liquids or gases

*Membrane processes - reverse osmosis can remove metals/organics

*Absorption - carbon removes organics/other absorbent are application dependent

-Chemical treatment options:

*Precipitation - metals removal

*Oxidation - organic destruction

*Reduction - dechlorination of organics

*Photolysis - dioxin and cyanide destruction

-Biological treatment options:

- *Aerobic/Anaerobic - organic removal and degradation
- *Land Treatment - organic sludge degradation
- *Specialized Microorganisms - organic degradation/
application dependent

-Thermal incineration treatment options:

- *Liquid injection - liquid organic waste destruction
- *Rotary kiln - sludge and organic solids destruction
- *Fluidized bed - sludge and organic solids destruction

-Solidification/stabilization/immobilization options:

- *Sorption - solidification of wastes for immobilization
(i.e., flyash, clays, lime, carbon).
- *Pozzolanic - lime/flyash/Portland Cement for
solidification

Off-site disposal - off-site treatment, storage, or disposal may be used as an alternative to on-site techniques when such actions are:

- .Less costly than other remedial actions
- .A step toward better overall hazardous waste management
- .Necessary to protect the health and environment from potential risk of exposure to the continued presence of the wastes.

OSHA and worker exposure - Since hazardous substance releases may be dangerous to human health and safety, the OSC is responsible for seeing that cleanup contractors comply with all applicable OSHA regulations on worker exposure.

HAZMAT RESPONSE EQUIPMENT

Emergency response equipment is located throughout the plant as noted.

Boat House Spill Crib

- 2 Drum Repair Kits
- 6 Weather Proof Spill Kits
- 2 Acid Neutralization Kits
- 2 Caustic Neutralization Kits
- 1 Drum, Oil Bond Stabilizer
- 1 Drum, Water Bond Stabilizer
- 40 Bags, Universal Absorbent
- 6 Steel Overpack Drums, 85 gals.
- 8 Bails, 8" Floating Absorbent Oil Boom
- 4 50' Section Permanent Floating Oil Boom, 6" float, 6" skirt
- 4 50' Section Permanent Floating Oil Boom, 16" float, 22" skirt
- 2 Reels 3/8" x 600' Polypropylene Yellow 3-Strand Rope
- 2 Reels 1/2" x 600' Polypropylene Yellow 3-Strand Rope
- 6 Brooms
- 4 Rolls, Barricade Tape
- 1 Box, Heavy Duty Plastic Bags
- 12 Traffic Cones
- 2 Drum Slings
- 1 Life Line & Harness
- 1 Bolt Cutter
- 1 5-Gas Air Monitor
- 1 Universal Sampler, with Extension Poles
- 12 Wide Mouth Glass Bottles, 1 qt.
- 12 Polyethylene, Chemical & Specimen Bottles, 1 qt.
- 24 Plastic Pails, 5 qt.

This equipment is in daily use at the plant and is available on an as needed basis. Quantity shown may vary due to usage. However, every effort is made to keep the inventory of spill response materials at the above levels.

Construction Services Tool Crib

Confined Space Ventilation Equipment

Belt Contained Breathing Apparatus Units, 5 Minute

Personal Protection Clothing and Respirators

Mechanical Standby Equipment

Portable Gasoline Driven Pumps and Hoses

Catamaran Work Boat with 65 HP Outboard Motor

Loaders and Power Sweepers

All mechanical equipment that is not in use is checked monthly for normal function (see inspection section).

HISTORICAL INFORMATION

Behind this tab is a history of pollution incidents at the Rouge Complex, and the corrective actions taken to prevent a similar incident in the future. Complete Pollution Incident Reports have been forwarded to the appropriate governmental agencies as required.

The pollution incident potential of individual facilities within the Rouge Complex have been reduced by the installation of dikes around tanks containing oil or critical materials where necessary.

As a preventative measure, every outfall to the Rouge River, except the discharge of the Tailrace sewer, has an oil retention facility to preclude surface oil from reaching the river.

For more information regarding the Tailrace sewer, please see the Rouge Steel Company Spill Plan or contact G. Doroshewitz at 313/323-1260.

ADDRESSEES

Below is a list of addressees who are to receive this plan. Copies for Ford personal should be sent to their office/department. Non Ford addressees should be sent copies via U.S. Mail with "Return Receipt Requested."

Chief of Security, Rouge Plant Security
Fire Chief, Rouge Fire Department
Fire Chief, Dearborn Fire Department
Director, Wayne County Emergency Coordinator
Commander, United States Coast Guard, Marine Safety Office
Director, Environmental Protection Agency, Region V
Director, Michigan Department of Natural Resources, Lansing
District Supervisor, Michigan Department of Natural Resources, Northville
Manager, Stationary Source Environmental Control Office
Manager, Corporate Insurance Office
Manager, Plant Engineering Office
Designated Environmental Representative, Dearborn Assembly Plant
Designated Environmental Representative, Dearborn Engine Plant
Designated Environmental Representative, Dearborn Frame Plant
Designated Environmental Representative, Dearborn Glass Plant
Designated Environmental Representative, Dearborn Stamping Plant
Designated Environmental Representative, Dearborn Tool & Die Plant
Designated Environmental Representative, Rouge Steel Company
Manager, Technical and Transportation Services
Manager, Transportation and Rouge Services
Manager, Construction and Environmental Services

INSPECTIONS And RECORDKEEPING

Behind this tab are the pollution prevention inspection sheets for Transportation and Rouge Services. The inspection program is designed to provide a way to head off accidental releases of pollutants and to comply with governmental requirements for inspections of potential pollution sources. This program is not a substitute for regular preventative maintenance or day to day common sense operations.

The inspections are to be performed on the frequency listed in the headings. Personnel performing the inspections must date and sign the inspection sheets. A valid "signature" can be; printed name, signed name, initials, social security number, etc. Notations such as "third shift operator" are not acceptable. Inspections can be performed by any qualified, trained, responsible person, hourly or salary.

Regular inventory of tanks by comparing actual quantity on hand to amounts received and/or dispensed can provide a means of determining if underground tanks are leaking without physical inspections.

Records are kept in the T&RS building in the Rouge Complex. These records are available for on-site review by government agencies. All records are kept a minimum of three years.

TRAINING REQUIREMENTS

- A. Training Programs
- B. Spill Prevention Briefings
- C. Dissemination of Information
- D. Annual Training
- E. Training Records

TRAINING PROGRAMS

Training programs have been developed to apprise both process and wastewater treatment employees of accidental spills, the importance of preventive measures, and procedures for notifying supervisory personnel of accidents that might result in discharges of pollutants.

Training includes the prevention of situations where the improper arrangement of valves, physical impact, cross connections, and negligence in routine inspection which could cause the loss of pollutants.

Training also includes the simulation of pollution incidents and contingency plan procedures.

SPILL PREVENTION BRIEFINGS

Plant Engineering and other affected personnel are periodically instructed in spill prevention control and countermeasure procedures. Stationary Source Environmental Control Office and Management and Technical Training Department, have developed a Pollutant Spill Prevention Program consisting of videotape instruction and training sessions and accompanying supplemental written materials. This program is periodically presented to appropriate plant supervisory and hourly employees at this and other Ford Motor Company facilities on a circulating basis.

DISSEMINATION OF INFORMATION

Stationary Source Environmental Control Office periodically distributes to affected Company divisions and plants information concerning federal, state, and local regulations, spill events, and recently developed precautionary measures. The Plant Engineering Office, Manufacturing Staff, also publishes periodic engineering guidelines and procedures regarding preventive maintenance, construction and wastewater treatment systems.

ANNUAL TRAINING

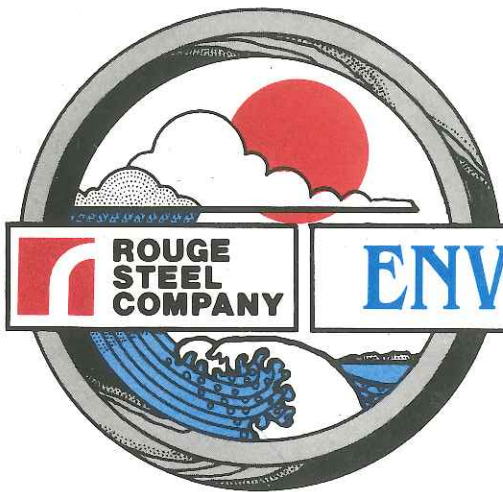
Each employee that handles hazardous wastes must be trained on hazardous waste regulations, spill response, and handling once each year. Employees who cannot attend, or are subsequently transferred into an area that requires them to handle hazardous wastes, must be trained by their immediate supervisor prior to their handling any hazardous waste material.

TRAINING RECORDS

Each class conducted must have a lesson plan detailing subjects covered and a brief outline of each subject.

Records will be maintained of each session plan, with every attendees: name, social security number, job classification, and date and time of the training lesson. Records are kept in the T&RS building in the Rouge Complex. These records are available for on-site review by government agencies. All records are maintained a minimum of three years.

Classes conducted by supervisors must be documented on memo, or two way memo, providing the above information. The memo will be kept on file where it will be maintained for review by: Ford Motor Company, Federal, and State auditors.



ENVIRONMENTAL CONTROL

Dearborn, Michigan

HAZARDOUS WASTE CONTINGENCY PLAN

CONTROLLED COPY #

ROUGE STEEL COMPANY
HAZARDOUS WASTE CONTINGENCY PLAN

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I - Iron Making, M - Melting, F - Finishing, P/S - Power and Utility/Shops

PLANT OPERATIONS

The Rouge Steel Company is involved in the production and processing of steel and resulting by-products. As a result of these activities and the waste products produced, the facility is classified as a Generator of Hazardous Wastes and is subject to the regulations of 40 CFR 262, 40 CFR 264, and 265.

Treatment Storage and Disposal

Hazardous wastes generated at this facility and their corresponding waste code numbers are as follows:

- Coke oven drip water (D003) - regulated under 40 CFR 261.23 (a) (5) due to the presence of cyanide and sulfide.
- Final cooler water (D003) - regulated under 40 CFR 261.23 (a) (5) due to the concentration of cyanide and sulfide.
- Coke oven tar sludge (K087) - regulated under 40 CFR 261.23 (a) (5)
- Light oil Muck (D003) - regulated under 40 CFR 261.23 (a) (5) due to cyanide.
- Waste halogenated solvents (F001) - listed as hazardous in 40 CFR 261.31; 1, 1, 1-trichloroethane from vapor degreasing and methylene chloride from dip degreasing.
- Electric arc furnace dust (K061) - listed under 40 CFR 261.32 because of the potential presence of chromium, lead, and cadmium.
- Waste pickle liquor (K062) - listed under 40 CFR 261.32 because of the possible presence of chromium and lead.
- Waste mineral spirits (D001) - combustible material from parts washers; serviced by Safety Kleen. Mineral spirits are reprocessed by Safety Kleen per 40 CFR 265.

On-site disposal of final cooler water occurs through deep-well injection. This portion of the facility is regulated under 40 CFR 265.430. All of the other wastes are transported off-site for disposal.

EMERGENCY NOTIFICATION PROTOCOL

Personnel are instructed to immediately contact Rouge Plant Security in the event of a spill of hazardous materials. The Plant security Office is staffed 24 hours per day, 365 days per year, and maintains an up-to-date emergency call list.

Rouge Plant Security
3001 Miller Road
Dearborn, MI 48121

(313) 322-3211
(313) 322-7690

An Environmental representative has been assigned responsibility for coordinating responses to environmental incidents such as hazardous waste spills. Plant Security has been instructed to immediately contact this individual in the event of a serious spill which cannot be contained by on-scene personnel or which poses a threat to public health or the environment.

On weekends and off-shifts, Security will contact the assigned "on call" Environmental Engineer. The "on call" list is published the last week of each month for the succeeding month.

The "on call" list distribution is:

W. Dotterrer	(Environmental Services)
Gas Dispatcher	(Primary Operations)
J. Stewart	(Marine Operations)
R. Klaes	(Melting Operations)
D. McDermid	(Hot Mills Operations)
N. Pahl	(Cold Mills Operations)
S. Polonczyk	(Security)
S. Rosa	(Power Operations)
R. Sayre	(Safety)
G. T. Simmons	(Rouge Fire Department)

PRIMARY EMERGENCY COORDINATOR

Gerald Doroshewitz
13745 Strathcona #227
Southgate, MI 48195
284-7648

If the Primary Emergency Coordinator cannot be reached, Plant Security has been instructed to contact an Alternate Emergency Coordinator.

John Forrester
4249 Climbing Way
Ann Arbor, Michigan 48103
1-426-3631

William Gaines G. E. Waggoner, Jr.
45021 Foxton 6775 Plainfield
Novi, Michigan 48050 Dearborn Heights, MI 48127
1-348-3414 274-4925

Rudolph Dawson
2164 Margery Street
Ypsilanti, Michigan 48198
1-485-4270

Stephen Landes
1260 Barrister
Ann Arbor, Michigan 48105
1-769-7570

David O'Connor
18680 Bungalow Drive
Lathrup Village, Michigan 48076
569-7742

Robert Toth
22355 Kingston Court
Woodhaven, Michigan 48183
676-1450

Outside Agencies

In the event of an incident which presents a serious hazard to property or public health and safety, the Rouge Fire Department will notify the following municipal agencies:

Dearborn Fire Department
Telephone: 943-2100

Dearborn Police Department
Telephone: 943-2200

Medical emergencies would be handled by the on-site facility:

Rouge Medical Facility
Telephone: 323-0045
Ambulance: 322-1133
Emergencies: 322-3313

Outside Agencies (continued)

In the event of a significant incident involving personal injury, the emergency facilities of Oakwood Hospital would be used.

Oakwood Hospital
18101 Oakwood, near Southfield
Dearborn, MI 48124
Emergency Department: 593-7440

Other than the above mentioned emergency responses to the local public safety agencies, it is the responsibility of the Environmental Representative to notify the appropriate governmental agencies in the event of an environmental incident. The various agencies which would be notified, as appropriate, include the following:

Primary Contacts

1. U.S. Coast Guard - EPA
National Response Center
Washington, DC
(800) 424-8802
2. State of Michigan
Department of Natural Resources
Pollution Emergency Alert System (PEAS)
(800) 292-4706

Alternate Contacts

1. U.S. Coast Guard
Captain of the Port - Detroit
Marine Safety Office
McNamara Office Building
(313) 226-7777
2. U.S. Environmental Protection Agency, Region V
Michigan-Ohio District Office
9311 Groh Road
Grosse Ile, MI 48138
(313) 675-6500
3. Michigan Department of Natural Resources
Detroit Area District
15500 Sheldon Road
Northville, MI 48167
(313) 459-9180

In the event that hazardous materials have been or are likely to be discharged to the sewer system, the following agencies are also to be notified:

Detroit Water and Sewage Department
933-4145
or 833-4077

Dearborn Water Department
943-2307

HAZARDOUS WASTE CONTINGENCY PLAN

The following General Contingency Plan will be initiated upon any release of hazardous materials which cannot be maintained by on-scene personnel and that could threaten human health or the environment. It will also be instituted upon recognition of any condition which could result in such a release if not corrected or controlled. Detailed specific plans apply to each of the individual hazardous materials present on-site.

A. Responsibilities of On-Scene Personnel

1. Initiate notification procedure according to emergency call list, providing the following information:
 - a. Location of incident.
 - b. Extent of emergency response required (e.g. fire apparatus, ambulance).
 - c. Any circumstances known which may affect emergency response.
 - d. Name of person making report.
2. Initiate spill response and control measures, such as:
 - a. Close valves to isolate system where possible.
 - b. Isolate spill to greatest extent possible by use of earthen dams or absorbent materials. Do not use absorbents to soak up spilled material unless necessary to prevent material from moving into sewers, confined spaces or the river.
 - c. Provide barriers to prevent unauthorized access to spill site.
3. Remain on-site until arrival of emergency response personnel.

B. Responsibility of Emergency Coordinator

1. Evaluate situation based on initial information and give instructions as required.
2. Proceed immediately to location of incident to direct emergency efforts.
3. If a release of hazardous waste has occurred which could threaten human health or the environment, immediate notification must be given to the National Response Center (800) 424-8802, including:
 - a. Reporting individual's name and telephone number.
 - b. Rouge Steel Company and location of spill (e.g. coke ovens).
 - c. Time and type of incident.
 - d. Amount and name of materials involved.
 - e. Any injuries.
 - f. Hazards to public health and environment.
4. Immediately make a complete record of the incident.
5. Submit a written report to the EPA Regional Administrator and the Michigan Department of Natural Resources within 15 days of the incident (264.56j).

ROUGE STEEL COMPANY
HAZARDOUS WASTE PLAN
EMERGENCY RESPONSE*

EXPLANATIONS OF WORDS AND TERMS

Full Protective Clothing

This means protection to prevent inhalation of, ingestion of, or skin contact with hazardous vapors, liquids and solids. It includes a helmet, self-contained breathing apparatus, coat, pants, rubber boots and gloves customarily worn by fire fighters. This **turnout clothing may not** provide protection from vapors, liquids or solids encountered during hazardous materials incidents. Full protective clothing should meet the OSHA Fire Brigades Standard (29 Code of Federal Regulations 1910.156). Chemical-cartridge respirators or gas masks are **not** acceptable substitutes for self-contained breathing apparatus. The demand-type self-contained breathing apparatus is being phased out of service since it does not meet the OSHA Fire Brigades Standard cited above.

Special Protective Clothing and Equipment

This category of clothing and equipment will protect the wearer against the specific hazard for which it was designed. The special clothing may afford protection only for certain chemicals and may be readily penetrated by chemicals for which it was not designed. Do not assume any protective clothing is fire resistant unless that is specifically stated by the manufacturer.

Isolate Hazard Area and Deny Entry

Keep everybody away from the hazard area if not directly involved with the emergency response or rescue operation. Do not let unprotected people into the area. Conduct any rescue operation as quickly as possible entering the scene from the upwind approach. This "isolate" step is the first to be taken even if "evacuation" is to follow.

Evacuate

Remove all people from area and buildings as far as recommended in the evacuation distance table presented in the back of this guidebook. Good judgment must be used in evacuation procedures to avoid placing people in greater danger. Topographic maps may assist you in the planning and execution of evacuations. You may obtain indexes of the topographic maps published for each state free of charge on request from the nearest office of The U.S. Geological Survey. Buy the maps you need to cover your area of responsibility. Preplanning and response team training is recommended.

Decontamination of Personnel and Equipment

Emergency services personnel should be decontaminated as soon as possible after contact occurs. Since the methods to be used differ from one chemical to another it is important to contact the shipper and medical authorities quickly to determine the most appropriate decontamination procedures. Contaminated protective clothing and equipment should be isolated to prevent further human contact, and should be stored in a restricted area (hot zone) at the incident site until appropriate decontamination procedures can be determined. In some cases, protective clothing and equipment cannot be decontaminated and will have to be disposed of according to appropriate state and federal guidelines.

Positive Pressure Breathing Apparatus

Positive pressure breathing apparatus is the best choice for complete protection during operations involving hazardous materials. Use apparatus certified by NIOSH and the Mine Safety and Health Administration in accordance with 30 Code of Federal Regulations Part II (30 CFR Part II) and used in accordance with the Respiratory Protection Standard (29 CFR 1910.134) and the OSHA Fire Brigades Standard (29 CFR 1910.156).

*NOTE: This information is taken from the "1984 Emergency Response Guidebook;" Dept. of Transportation Publication DOT P 5800.3

MAP SYMBOLS



AUTOMATIC
SPRINKLERS



SPRINKLER RISER



TRIPLE HYDRANT



AIR PACK



FIRE BLANKET



ANSUL DRY
CHEMICAL



CARBON DIOXIDE



WATER



STRETCHER

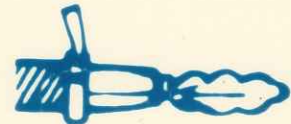


BOX



FIRE HOSE

P.I.V. POST. IND. VAL.



FOAM HOSE



PULL STATION

SK SAFETY KLEEN
PARTS WASHER

RT ROTUNDA
PARTS WASHER

HAZARDOUS MATERIALS INVENTORY

Material: Coke Oven Drip Water

Type of Storage: 5 - 10,000 gallon tanks*
1 - 5,000 gallon tank*
2 - 2,000 gallon tanks**
2 - 1,500 gallon tanks**
1 - 1,000 gallon tank**
1 - 12,000 gallon tank*

Location Various locations in coke oven area

Method of Disposal: Removed by licensed waste hauler

*Above ground tank locations:

1. XX Bldg. - North
2. XX Bldg. - South
3. North Quench Tower
4. Coal and Coke Lab
5. West Head House
6. EE Bldg. - N. E. Corner
7. Gas Holder

**Underground tank locations:

1. JJ Building
2. Old Booster Station
3. Continuous Caster (Specialty Fdry)
4. Frame Plant East
5. Frame Plant West

ROUGE STEEL COMPANY
SPCC/PIP PLAN
HAZARDOUS MATERIALS SUPPLEMENT

Hazardous Waste

Coke Oven - Drip Water

Description

Moisture in Coke oven gas condenses and collects in gas piping. This material is captured at drip legs and is accumulated in tanks. It is normally used as coke quench make up.

Hazardous Characteristics

	<u>Lab #1</u>	<u>Lab #2</u>	<u>Hazardous ?</u>
. Ignitable (Flash)	90°C	-	No
. Corrosive (ph)	7.8	6.1	No
. Reactive			
Unstable	-	-	No
Water	-	-	No
Acid	-	-	No
Caustic	-	-	No
Cyanide (mg/l)	720	690	Yes
Sulfide (mg/l)	120	302	Yes
Explosive	-	-	No
. Toxic (in mg/l)			
Arsenic	0.003	0.2	No
Barium	0.10	0.2	No
Cadmium	0.02	0.1	No
Chromium	0.03	0.1	No
Lead	0.18	0.1	No
Mercury	0.116	0.1	No
Selenium	0.004	0.1	No
Silver	0.01	0.1	No

Transportation Information for Contaminated Clean Up Material

. DOT Name	Hazardous Waste, Liquid, n.o.s. NA9189
. Hazard Class	ORM-E
. Hazardous Waste Number	D003 (Reactive: Cyanide and Sulfide)
. Other	
. Hauler/ID	Environmental Waste Control MID057002602
. Disposer/ID	Environmental Waste Control MID057002602

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ROUGE STEEL COMPANY
HAZARDOUS WASTE PLAN
EMERGENCY RESPONSE*

Material:

Guide Number: 55

HEALTH HAZARDS

Poisonous; may be fatal if inhaled, swallowed or absorbed through skin.
Contact may cause burns to skin and eyes.
Fire may produce irritating or poisonous gases.
Runoff from fire control water may give off poisonous gases.
Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

Some of these materials may burn but none of them ignite readily.
Cylinder may explode in heat of fire.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Stay upwind; keep out of low areas.
Ventilate closed spaces before entering them.
Wear **positive pressure** breathing apparatus and special protective clothing.
Remove and isolate contaminated clothing at the site.
FOR EMERGENCY ASSISTANCE CALL Rouge Fire Dept at 23313
If water pollution occurs, notify appropriate authorities.

FIRE

Small Fires: Dry chemical, CO₂, water spray or foam.
Large Fires: Water spray, fog or foam.
Move container from fire area if you can do it without risk.
Fight fire from maximum distance.
Dike fire control water for later disposal; do not scatter the material.

SPILL OR LEAK

Do not touch spilled material; stop leak if you can do it without risk.
Use water spray to reduce vapors.
Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal.
Small Dry Spills: With clean shovel place material into clean, dry container and cover; move containers from spill area.
Large Spills: Dike far ahead of spill for later disposal.

FIRST AID

Move victim to fresh air; call emergency medical care.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
In case of contact with material, immediately flush skin or eyes with running water for at least 15 minutes.
Speed in removing material from skin is of extreme importance.
Remove and isolate contaminated clothing and shoes at the site.
Keep victim quiet and maintain normal body temperature.
Effects may be delayed; keep victim under observation.

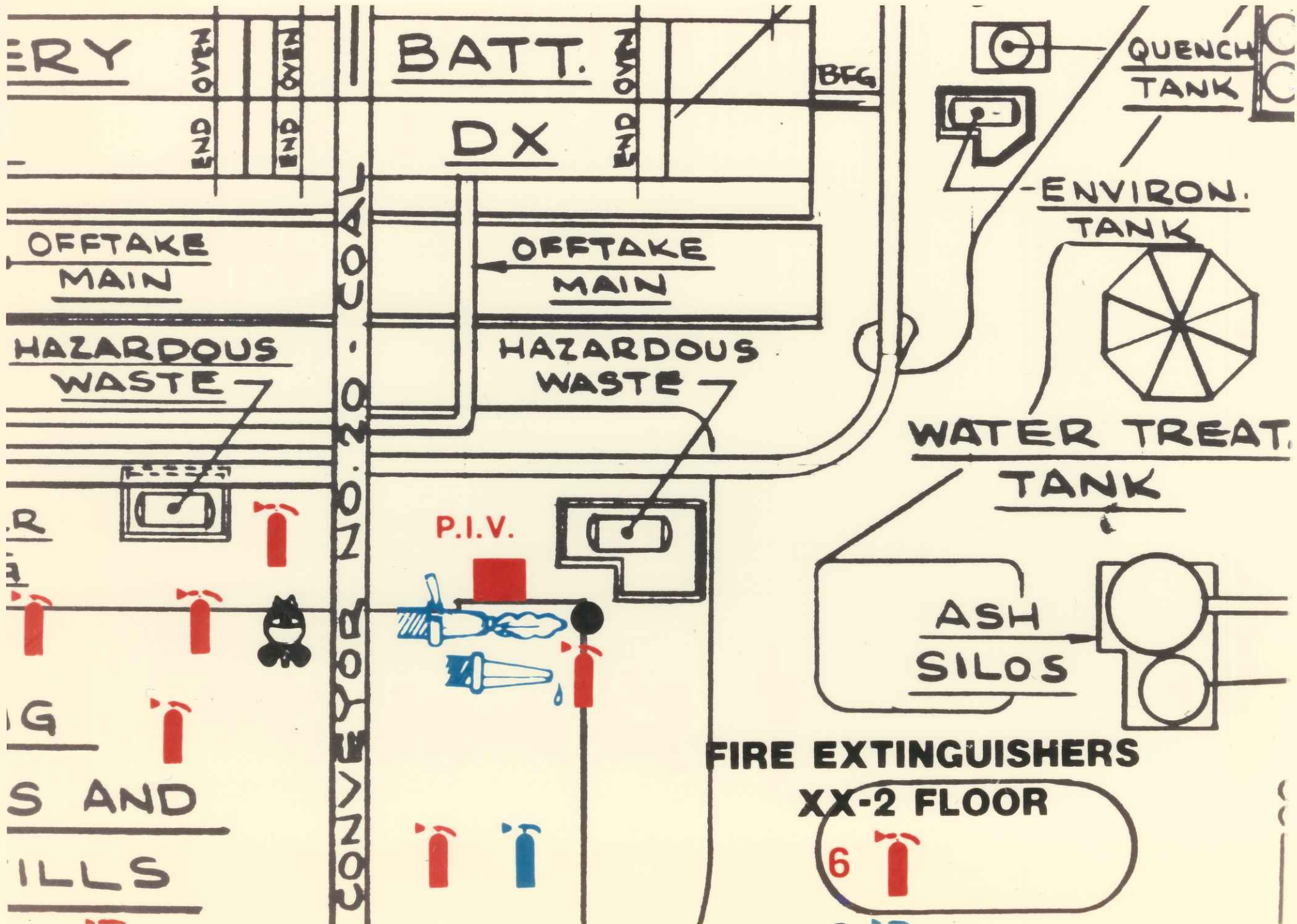
*NOTE: This information is taken from the "1984 Emergency Response Guidebook;" Dept. of Transportation Publication DOT P 5800.3

CONTINGENCY PLAN Coke Oven Drip Water

Coke oven gas line drips are collected in seven above ground (5,000 and 12,000 gallon) and five below ground tanks. Control of this waste thus relies on the integrity of the individual tanks and the piping system which carries the coke oven gas and which directs the resulting drip water to the collection tanks. This material is a clear, lightly colored liquid which is non-corrosive, non-flammable, and relatively non-toxic. The hazardous designation derives from the potential for release of toxic gases if mixed with highly acidic solutions.

The piping system is monitored visibly by furnace patrol personnel a minimum of once per shift. These personnel are routinely equipped with the standard safety equipment of gloves, coveralls, hard hat, safety shoes, and safety glasses. In the event of a leak being observed, the patrol person will isolate the problem portion of the system by closing the appropriate valves. The volume of gas line drips in the piping system at any one time is very small. Leaks would be contained in a small volume of soil at the point of the leak. There is no source of acid within the gas line system, and consequently, there is no way for the hazardous characteristic of this material to be manifest.

The greater opportunity for uncontrolled release of this material is from the storage tanks because of the larger volume involved. The damage potential is minimized by all of the above ground tanks being within a lined dike capable of holding 150 percent of the tank volume. The liquid level in each underground tank is measured once per shift; preventing overfilling as well as an indication - based on historical experience - of any leakage from underground tanks. In the event of a rupture of an above ground tank, the furnace patrol would report it by telephone to their supervisor, who would initiate the general contingency plan. Telephones are located within 100 yards of each of the tanks. The ruptured tank would then be isolated from the system to avoid an overflow of the dike. Once again, the absence of any significant acid source in the vicinity of the storage tanks precludes the existence of critical environmental situation. A commercial waste hauler is on 24-hour call and would be directed to pump the material from the diked area and dispose of it in the quench tower wet well or, if necessary, off-site at an approved disposal facility.



**FIRE EXTINGUISHERS
XX-2 FLOOR**



EMISSIO

MECHANICAL SHOP

TRAILER

**COAL AND
COKE LAB.**

Q. CAR
REPAIR

ENVIRON: TAXY

YEWZOO

BATT.

Δx

COAL

二四

AS

END

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ENVIRON.
TANK

EMISSIONS
BAGHOUSE

EMISSION FANS
NO. 4 AND NO. 5

DIESEL
FUEL

SUBSTA.

STACK

F-F BLDG.
MIXER

CONV. D-COAL

DRIVE HSE

GG BUIL

AS CONVEY

CONV. B.

HAZARDOUS MATERIALS INVENTORY

Material: Final Cooler Water.

Type of Storage: Storage is on an in-process basis because of on-site disposal.

Location: WW Pump House

Method of Disposal: Deep-well injection on-site.

ROUGE STEEL COMPANY
SPCC/PIP PLAN
HAZARDOUS MATERIALS SUPPLEMENT

Hazardous Waste

Coke Ovens - Final Cooler Water

Description

From Coke Oven gas final coolers; normally disposed of by deep well injection; pumped from Pump House west of final coolers to deep well east of Coal Road.

Hazardous Characteristics

	<u>Lab #1</u>	<u>Lab #2</u>	<u>Hazardous ?</u>
. Ignitable	90°C	-	No
. Corrosive	8.0	10.47	No
. Reactive			
Unstable	-	-	No
Water	-	-	No
Acid	-	No Reaction	No
Caustic	-	No Reaction	No
Cyanide	940	-	Yes
Sulfide	220	-	Yes
Explosive	-	-	No
. Toxic			
Arsenic	0.002	0.1	No
Barium	0.05	0.001	No
Cadmium	0.02	0.1	No
Chromium	0.02	0.05	No
Lead	0.02	0.1	No
Mercury	0.0008	0.03	No
Selenium	0.002	0.1	No
Silver	0.01	0.3	No

Transportation Information for Contaminated Clean Up Material

. DOT Name	Hazardous Waste, liquid, n.o.s. NA9189
. Hazard Class	ORM-E
. Hazardous Waste Number	D003 (Reactive: Cyanide/Sulfide)
. Other	
. Hauler/ID	Environmental Waste Control MID057002602
. Disposer/ID	Environmental Waste Control MID057002602

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ROUGE STEEL COMPANY
HAZARDOUS WASTE PLAN
EMERGENCY RESPONSE*

Material:

Guide Number: 55

HEALTH HAZARDS

Poisonous; may be fatal if inhaled, swallowed or absorbed through skin.
Contact may cause burns to skin and eyes.
Fire may produce irritating or poisonous gases.
Runoff from fire control water may give off poisonous gases.
Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

Some of these materials may burn but none of them ignite readily.
Cylinder may explode in heat of fire.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Stay upwind; keep out of low areas.
Ventilate closed spaces before entering them.
Wear **positive pressure** breathing apparatus and special protective clothing.
Remove and isolate contaminated clothing at the site.
FOR EMERGENCY ASSISTANCE CALL Rouge Fire Dept at 23313
If water pollution occurs, notify appropriate authorities.

FIRE

Small Fires: Dry chemical, CO₂, water spray or foam.
Large Fires: Water spray, fog or foam.
Move container from fire area if you can do it without risk.
Fight fire from maximum distance.
Dike fire control water for later disposal; do not scatter the material.

SPILL OR LEAK

Do not touch spilled material; stop leak if you can do it without risk.
Use water spray to reduce vapors.
Small Spills: Take up with sand or other noncombustible absorbent material
and place into containers for later disposal.
Small Dry Spills: With clean shovel place material into clean, dry container
and cover; move containers from spill area.
Large Spills: Dike far ahead of spill for later disposal.

FIRST AID

Move victim to fresh air; call emergency medical care.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
In case of contact with material, immediately flush skin or eyes with running
water for at least 15 minutes.
Speed in removing material from skin is of extreme importance.
Remove and isolate contaminated clothing and shoes at the site.
Keep victim quiet and maintain normal body temperature.
Effects may be delayed; keep victim under observation.

*NOTE: This information is taken from the "1984 Emergency Response
Guidebook;" Dept. of Transportation Publication DOT P 5800.3

CONTINGENCY PLAN
Final Cooler Water

This is a clear, colorless material with an odor of naphthalene or "mothballs." It is non-flammable, non-corrosive, and relatively non-toxic. Its hazardous designation derives from the potential for the release of toxic gases in acidic media. The material is disposed of on-site by deep well injection as it is generated. There is no storage system. There is an operator on duty at all times who visually inspects the integrity of the piping system. The operator also inspects the injection well pumphouse each hour.

In the event of a piping failure resulting in a spill of material, the liquid would travel to a drainage tunnel between WW and XX buildings. The material would be processed first in the AC Stills and finally in the treatment plant for removal of cyanide and phenol. The only hazard with respect to this material is the potential for generation of toxic fumes if mixed with an acidic solution. There is no significant source of acid in any of the areas where this material would potentially flow.

101

NALCO

COOLERS

SCRUBBERS

PRIMARY COOLERS

FLUSH. LIQ. DECONT.

DECONT.

TAR (WEI) (LIG)

SPIRAL COOLERS

AS

PUMP

HOUSE

TAR

I.R.



FL. LIQ. COLL.

RAD. CLRS.

ERS

FINAL COOLERS

P.I.V.

NAPHTHALENE FLOTATION

(NAPH.) (NAPH.)

DECONT.



ROAD

SUBSTATION 46 A.

PUMP HSE. DEEP WELL

PHOSPHORIC ACID

TAN

HAZARDOUS MATERIALS INVENTORY

Material: Electric Furnace Dust

Type of Storage: Silo

Location: South end of Electric Arc Furnace Building

Method of Disposal: Removed by licensed hauler on a daily basis when furnace is in operation. Treated at a licensed treatment facility, and disposed of at a licensed disposal facility.

ROUGE STEEL COMPANY
SPCC/PIP PLAN
HAZARDOUS MATERIALS SUPPLEMENT

Hazardous Waste

Electric Furnace Dust

Description

Emission control dust from baghouse from primary production of steel in Electric Furnace.
This material is a dry, reddish brown, odorless, powdery solid.

Hazardous Characteristics

	Lab #1	Lab #2	Hazardous ?
. Ignitable	90°C	-	No
. Corrosive	N.A.	12.4	No
. Reactive			
Unstable	-	-	No
Water		**	No
Acid		**	No
Caustic	-	-	
Cyanide	Non Reactive	-	No
Sulfide	Non Reactive	-	No
Explosive	-	-	
. Toxic Mg/l			
Arsenic	0.007	0.1	No
Barium	0.61	0.5	No
Cadmium	0.32	0.1	No
Chromium	0.10	0.1	No
Lead	0.75	7.0*	Yes
Mercury	0.0002	0.1	No
Selenium	0.016	0.1	No
Silver	0.02	0.1	No
Zinc	490.00	0.7	No

Transportation Information for Contaminated Clean Up Material

. DOT Name	Hazardous waste, solid, N.O.S. NA9189
. Hazard Class	ORM-E
. Hazardous Waste Number	K061
. Other	Contains Lead and Zinc
. Hauler/ID	Michigan Disposal, Inc. MID000724831
. Disposer/ID	Michigan Disposal, Inc. MID00724831

*Greater than allowable concentration (5.0), Mg/l

Lab #1 1985

**No violent reaction

Lab #2 1986

ROUGE STEEL COMPANY
HAZARDOUS WASTE PLAN
EMERGENCY RESPONSE*

Material:

Guide Number: 32

FIRE OR EXPLOSION

Flammable/combustible material; may be ignited by heat, sparks or flames.
May burn rapidly with flare-burning effect.

HEALTH HAZARDS

Fire may produce irritating or poisonous gases.
Contact may cause burns to skin and eyes.
Runoff from fire control or dilution water may cause pollution.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Stay upwind; keep out of low areas.
Wear self-contained (positive pressure if available) breathing apparatus and full protective clothing.
FOR EMERGENCY ASSISTANCE CALL Rouge Fire Dept at 23313
If water pollution occurs, notify appropriate authorities.

FIRE

Small Fires: Dry chemical, sand, water spray or foam.
Large Fires: Water spray, fog or foam.
Move container from fire area if you can do it without risk.
Cool containers that are exposed to flames with water from the side until well after fire is out.
For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
Magnesium Fires: Use dry sand, Met-L-X powder or G-1 graphite powder; do not use water.

SPILL OR LEAK

Shut off ignition sources; no flares, smoking or flames in hazard area.
Do not touch spilled material.
Small Dry Spills: With clean shovel, place material into clean, dry container and cover; move containers from spill area.
Large Spills: Wet down with water and dike for later disposal.

FIRST AID

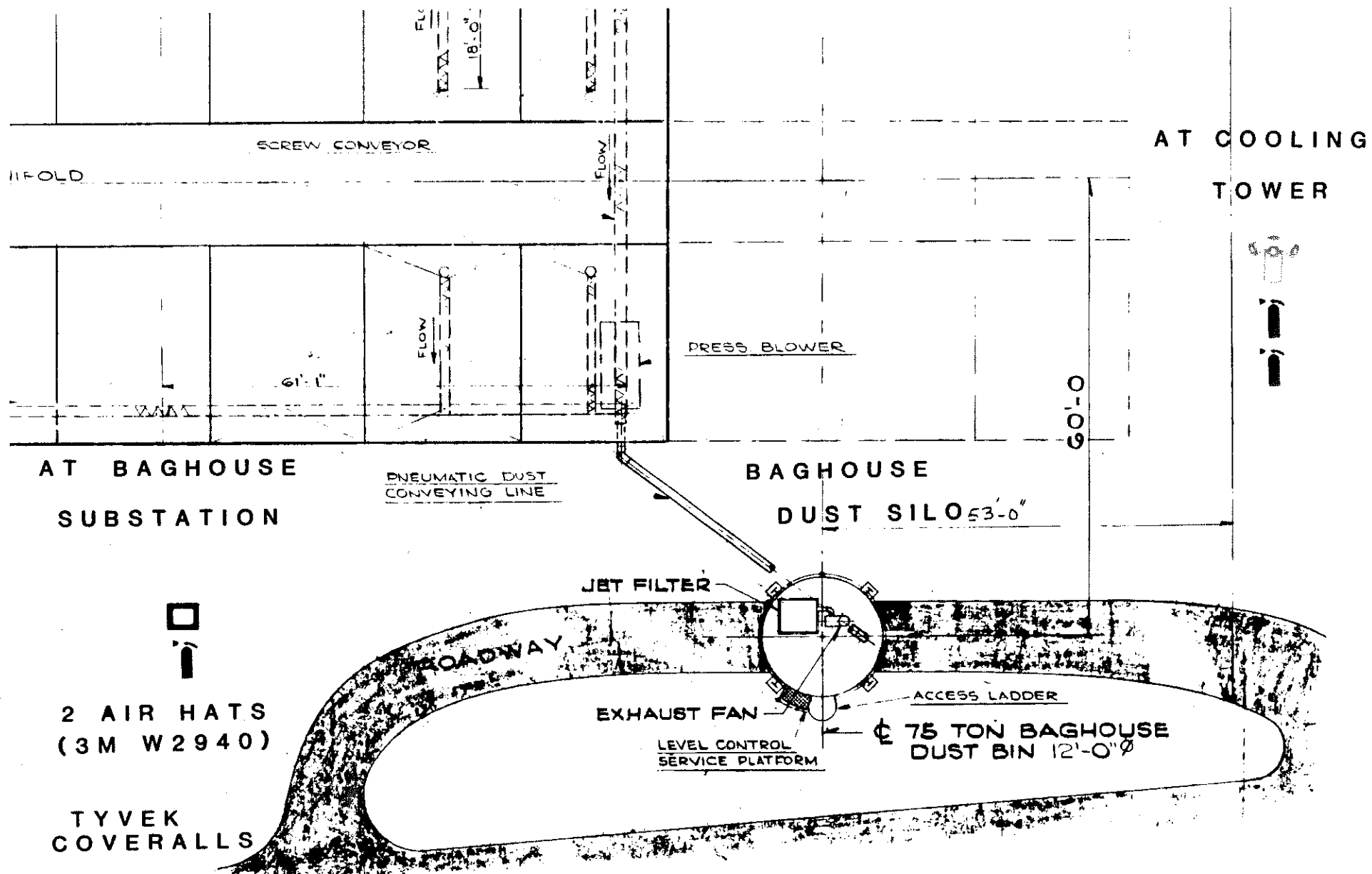
Move victim to fresh air; call emergency medical care.
In case of contact with material, immediately flush skin or eyes with running water for at least 15 minutes.
Remove and isolate contaminated clothing and shoes at the site.

*NOTE: This information is taken from the "1984 Emergency Response Guidebook;" Dept. of Transportation Publication DOT P 5800.3

CONTINGENCY PLAN
Electric Furnace Dust

This material is a dry, reddish brown, odorless, powdery solid. It is non-flammable, non-corrosive, non-reactive, and relatively non-toxic. Its hazardous designation is derived generically, since most wastes generated from such a process exceed the Extraction Procedure Toxicity limits (EP toxicity). The extract concentrations will depend in large part on the characteristics of scrap material being fed to the system. A given sample may not exceed any of the hazardous waste characteristics. If there is an exceedance, it would be in the EP toxicity test, and the material is subsequently non-toxic in the dry condition.

A dust man is on duty at the storage silo whenever the electric furnace is operating and/or a disposal truck is being loaded. In the event of a spill, the dust man is to wet down the material to minimize windblown transport. A water tap and hose is located adjacent to the storage silo. Tarps may be obtained from the Crib in Building F-36 to cover the material. The dust man is to notify the Stock Receiving Supervisor who would in turn direct the outside contractor to remove the material to the off-site disposal area. Two front end loaders are available on-site at all times to assist in any clean-up activities. Shovels, hard hats, masks, respirators, and Self Contained Breathing Apparatus (SCBA) are available in the Crib which is located approximately 100 feet from the storage silo.



PLAN

ELECTRIC ARC FURNACE

M
SH. 44

HAZARDOUS MATERIALS INVENTORY

Material: Light Oil Muck
Type of Storage: 2 - 10,000 gallon tanks
Location: Coke oven area - east of Light Oil Building
Method of Disposal: Removed by licensed waste hauler

ROUGE STEEL COMPANY
SPCC/PIP PLAN
HAZARDOUS MATERIALS SUPPLEMENT

Hazardous Waste

Coke Ovens - Light Oil Muck

Description

Coke oven gas is "washed" with wash oil to remove light oils. Light oils are removed from wash oil by distillation. Wash oil is decanted. The resulting sludge is transferred to light oil muck tanks at the Light Oil Plant for disposal by stabilization and landfilling.

Hazardous Characteristics

	<u>Lab #1</u>	<u>Lab #2</u>	<u>Hazardous ?</u>
. Ignitable	60°C	100°C	Combustible
. Corrosive	7.2	5.6	No
. Reactive			
Unstable	-	-	No
Water	-	-	No
Acid	-	HCl	No
Caustic	-	N	No
Cyanide	0.15 mg/l	1.0	No
Sulfide	Negative	-	No
Explosive	-	-	No
. Toxic			
Arsenic	0.002	0.1	No
Barium	0.08	0.1	No
Cadmium	0.02	0.1	No
Chromium	0.06	0.1	No
Lead	0.02	0.1	No
Mercury	0.0002	0.1	No
Selenium	0.002	0.1	No
Silver	-	-	No

Transportation Information for Contaminated Clean Up Material

. DOT Name	Hazardous waste, liquid, n.o.s. NA9189
. Hazard Class	ORM-E
. Hazardous Waste Number	D003
. Other	Contains a trace of cyanide and benzene
. Hauler/ID	Environmental Waste Control MID057002602
. Disposer/ID	Wayne Disposal MID048090633

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ROUGE STEEL COMPANY
HAZARDOUS WASTE PLAN
EMERGENCY RESPONSE*

Material:

Guide Number: 27

FIRE OR EXPLOSION

Flammable/combustible material; may be ignited by heat, sparks or flames.
Vapors may travel to a source of ignition and flash back.
Container may explode in heat of fire.
Vapor explosion hazard indoors, outdoors or in sewers.
Runoff to sewer may create fire or explosion hazard.

HEALTH HAZARDS

May be poisonous if inhaled or absorbed through skin.
Vapors may cause dizziness or suffocation.
Contact may irritate or burn skin and eyes.
Fire may produce irritating or poisonous gases.
Runoff from fire control or dilution water may cause pollution.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Stay upwind; keep out of low areas.
Wear self-contained (positive pressure if available) breathing apparatus and full protective clothing.
Isolate for 1/2 mile in all directions if tank car or truck is involved in fire.
FOR EMERGENCY ASSISTANCE CALL Rouge Fire Dept at 23313
If water pollution occurs, notify appropriate authorities.

FIRE

Small Fires: Dry chemical, CO₂, water spray or foam.
Large Fires: Water spray, fog or foam.
Move container from fire area if you can do it without risk.
Cool containers that are exposed to flames with water from the side until well after fire is out.
For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire.

SPILL OR LEAK

Shut off ignition sources; no flares, smoking or flames in hazard area.
Stop leak if you can do it without risk.
Use water spray to reduce vapors.
Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal.
Large Spills: Dike far ahead of spill for later disposal.

FIRST AID

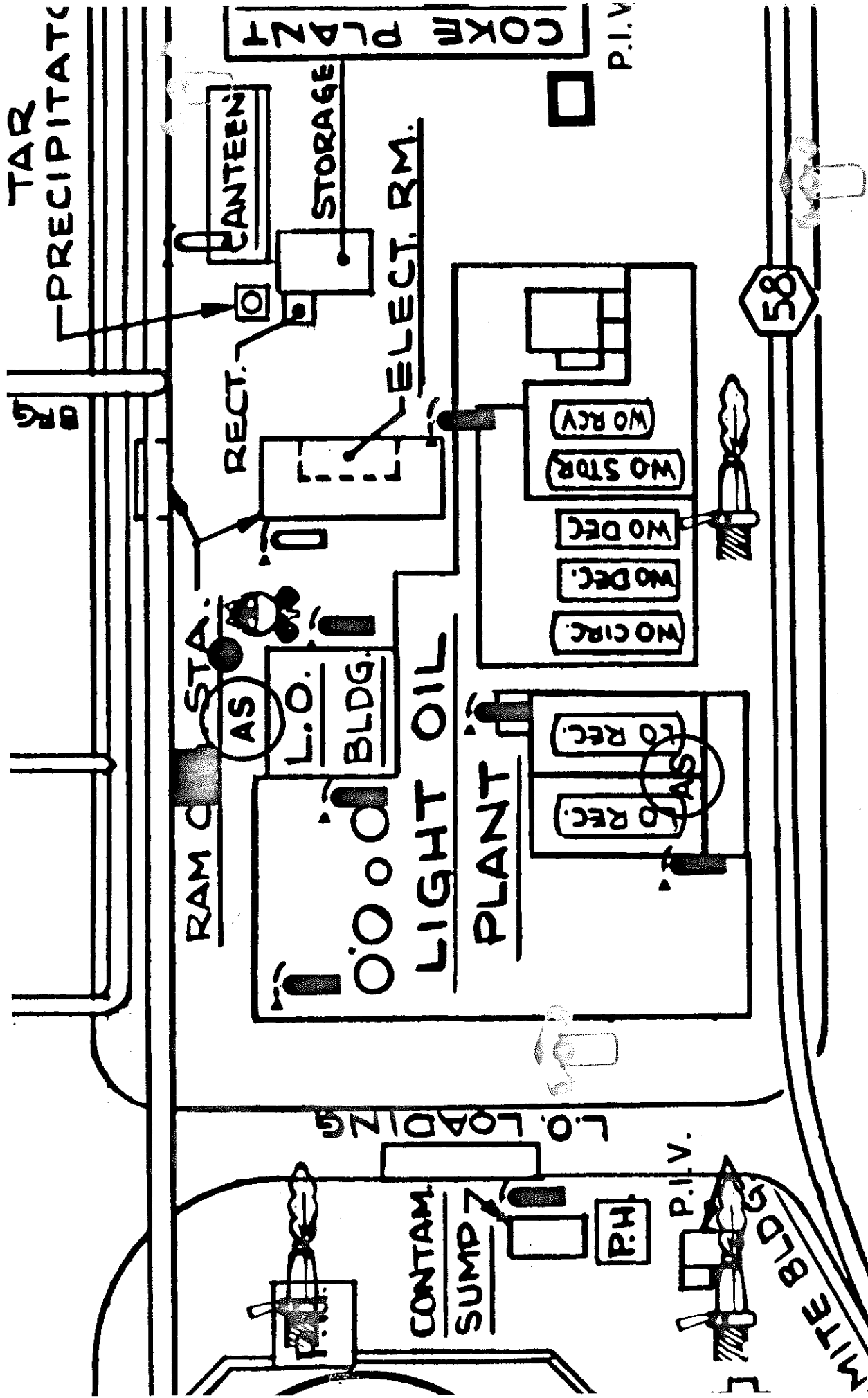
Move victim to fresh air; call emergency medical care.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Wash skin with soap and water.
Remove and isolate contaminated clothing and shoes at the site.

*NOTE: This information is taken from the "1984 Emergency Response Guidebook;" Dept. of Transportation Publication DOT P 5800.3

CONTINGENCY PLAN
Light Oil Muck

This is a brownish-black, "oily" liquid with a coal-tar type odor. It is hazardous because it's ignitable. The muck tanks are contained within lined dikes. Any leaks would be contained and subsequently collected and disposed of by a licensed waste contractor.

In the event of fire, there is an alarm box located outside of the Light Oil Building, which is adjacent to the tanks. This alarm box signals the Dearborn Fire Department, which has been informed that this particular area requires foam apparatus for extinguishing fires. There are also three foam fire stations with hose reels located around the periphery of the tanks at a distance of 50 to 200 feet. These would be used by Light Oil personnel to try to contain any fire until the arrival of the fire department.



HAZARDOUS MATERIALS INVENTORY

Material:	Coke Oven - Tar Storage Sludge
Type of Storage:	Accumulates in Tar Storage Tanks until tanks are cleaned - material removed from site as cleaning is performed.
Location:	Tar Tank Farm South of Light Oil Plant
Method of Disposal:	Hauled by Licensed Hauler to Licensed Landfill

ROUGE STEEL COMPANY
SPCC/PIP PLAN
HAZARDOUS MATERIALS SUPPLEMENT

Hazardous Waste

Coke Oven - Tar Storage Sludge

Description

Tar is collected from the flushing liquor decanter and pumped to tar storage tanks south of the light oil plant. Accumulated tar is pumped from these tanks to barges. Residual sludge from the tanks is normally disposed of by landfilling.

Hazardous Characteristics

	<u>Lab #1</u>	<u>Lab #2</u>	<u>Hazardous ?</u>
. Ignitable	-	138°C	No
. Corrosive	-	6.2	No
. Reactive			
Unstable	-	-	No
Water	-	-	No
Acid	-	HCl	No
Caustic	-	NaOH	No
Cyanide	-	-	No
Sulfide	-	-	No
Explosive	-	-	No
. Toxic			
Arsenic	-	0.1	No
Barium	-	0.1	No
Cadmium	-	0.1	No
Chromium	-	0.1	No
Lead	-	0.1	No
Mercury	-	0.4	No
Selenium	-	0.2	No
Silver	-	0.1	No

Transportation Information for Contaminated Clean Up Material

. DOT Name	Hazardous Waste, solid, n.o.s. NA9189
. Hazard Class	ORM-E
. Hazardous Waste Number	K087
. Other	Contains Phenol and Napthalene
. Hauler/ID	Environmental Waste Control MID057002602
. Disposer/ID	Wayne Disposal MID048090633

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ROUGE STEEL COMPANY
HAZARDOUS WASTE PLAN
EMERGENCY RESPONSE*

Material:

Guide Number: 27

FIRE OR EXPLOSION

Flammable/combustible material; may be ignited by heat, sparks or flames.
Vapors may travel to a source of ignition and flash back.
Container may explode in heat of fire.
Vapor explosion hazard indoors, outdoors or in sewers.
Runoff to sewer may create fire or explosion hazard.

HEALTH HAZARDS

May be poisonous if inhaled or absorbed through skin.
Vapors may cause dizziness or suffocation.
Contact may irritate or burn skin and eyes.
Fire may produce irritating or poisonous gases.
Runoff from fire control or dilution water may cause pollution.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Stay upwind; keep out of low areas.
Wear self-contained (positive pressure if available) breathing apparatus and full protective clothing.
Isolate for 1/2 mile in all directions if tank car or truck is involved in fire.
FOR EMERGENCY ASSISTANCE CALL Rouge Fire Dept at 23313
If water pollution occurs, notify appropriate authorities.

FIRE

Small Fires: Dry chemical, CO₂, water spray or foam.
Large Fires: Water spray, fog or foam.
Move container from fire area if you can do it without risk.
Cool containers that are exposed to flames with water from the side until well after fire is out.
For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire.

SPILL OR LEAK

Shut off ignition sources; no flares, smoking or flames in hazard area.
Stop leak if you can do it without risk.
Use water spray to reduce vapors.
Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal.
Large Spills: Dike far ahead of spill for later disposal.

FIRST AID

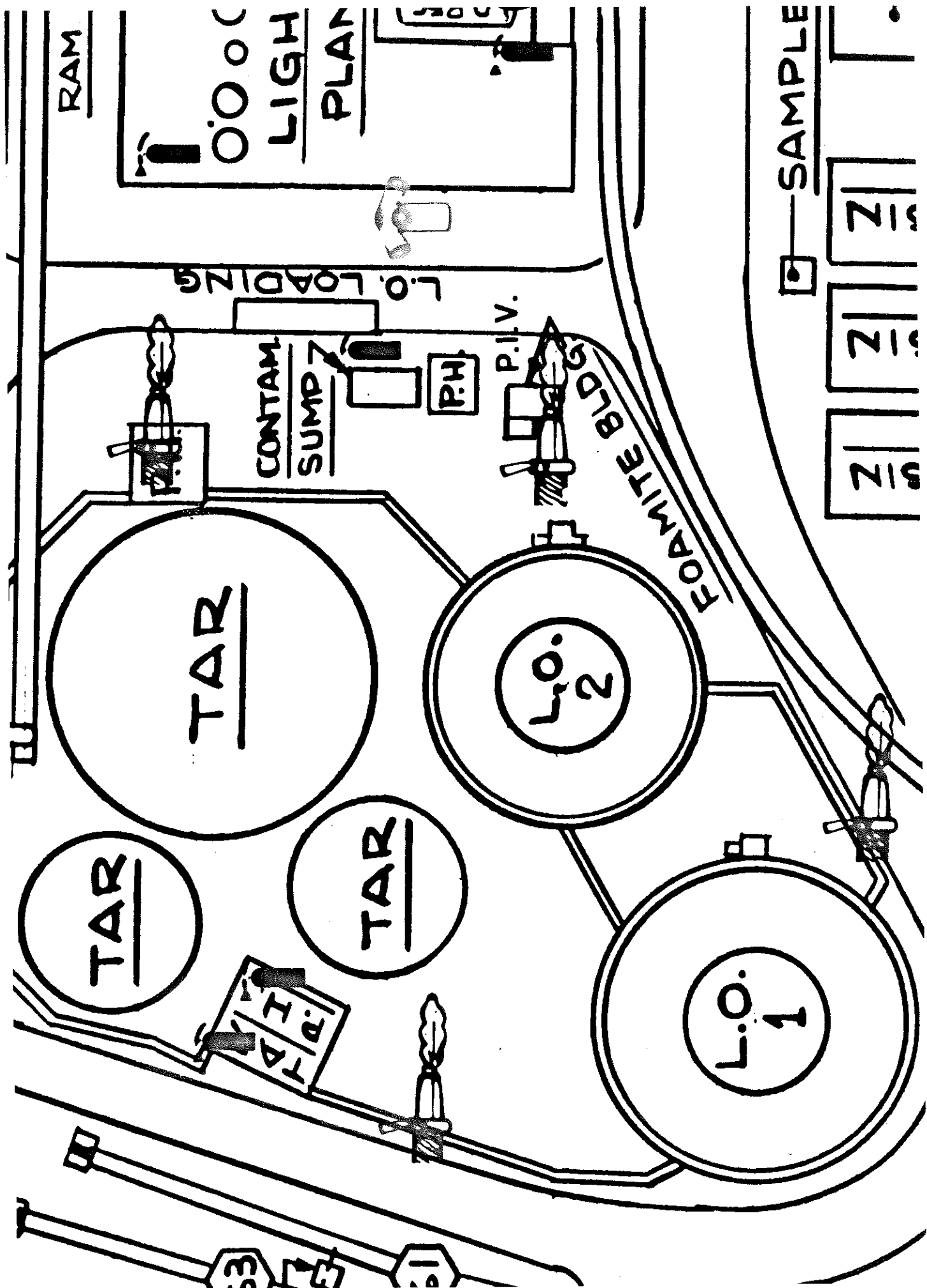
Move victim to fresh air; call emergency medical care.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Wash skin with soap and water.
Remove and isolate contaminated clothing and shoes at the site.

*NOTE: This information is taken from the "1984 Emergency Response Guidebook;" Dept. of Transportation Publication DOT P 5800.3

CONTINGENCY PLAN
Coke Oven Tar Sludge

This material accumulates in the tar storage tanks and must be disposed of when these tanks are cleaned. The three storage tanks are cleaned once every three to six years. The material is essentially a pasty mixture of tar and coke breeze.

The storage tanks themselves are in a diked area, thus there is essentially no way that the residual sludges remaining after the tar is removed could escape from the system. The only risk involved in this material is the possibility of its being ignited. There are foam nozzles inside the tanks to control any fire which might occur prior to the sludge being removed. There is also a foam hose immediately outside the Tar Pumphouse which is adjacent to the tanks, which would be used in case of a fire outside of the tanks.



HAZARDOUS MATERIALS INVENTORY

Material: Mineral Spirits
 Type of Storage: Self-Contained Cleaning Systems; Service by
 Outside Contractor

Location:

	<u>SHOP</u> <u>LOCATION</u>	<u>BRAND</u> <u>NAME</u>	<u>NO. OF</u> <u>UNITS</u>	
Hi-Lo	OH 36	SK* 1		
	OH 41	North	SK	1
	OH 41	DC**	1	
	OH 41	South	SK	1
Cold Mill Hi-Lo Shop	Y72	SK 1		
J-9 Instrument	Instrument Shop		Rotunda	1
J-9 Electrical	H17 (Mezzanine)		Rotunda	1
J-9 Crane Repair	H-19 (Second Floor)		Rotunda	1
J-9 Machine Shop	C24,25 North		RS***	1
J-9 Machine Shop	D14 South	SK	1	
J-9 Paint Shop	Warehouse	SK	1	
Hot Strip Mill	H78, B54, G32		SK	3
Power House	4th Floor Shop		SK	1

*SK-Safety Kleen
 **Dyna Clean
 ***Fabricated by Rouge Steel

Method of Disposal: Recycled by Licensed Hazardous Waste
 Disposal Facility

ROUGE STEEL COMPANY
SPCC/PIP PLAN
HAZARDOUS MATERIALS SUPPLEMENT

Hazardous Waste

Mineral Spirits (Petroleum Naptha)

Description

Maintenance areas at the Coke Ovens, Power House and J-9 Shops (Main, Warehouse, Hi-Lo Garage) use parts washers containing mineral spirits. This material is handled by Safety-Kleen. (See attached sheet for specific locations)

Hazardous Characteristics

	<u>Lab #1*</u>	<u>Lab #2</u>	<u>Hazardous ?</u>
. Ignitable	105°F		Combustible
. Corrosive	N/A		No
. Reactive	No		No
Unstable	Stable		No
Water	-		No
Acid	-		No
Caustic	-		No
Cyanide	-		No
Sulfide	-		No
Explosive	-		No
. Toxic			
Arsenic	-		No
Barium	-		No
Cadmium	-		No
Chromium	-		No
Lead	-		No
Mercury	-		No
Selenium	-		No
Silver	-		No

*MSDS - Safety Kleen

Transportation Information for Contaminated Clean Up Material

. DOT Name	Waste Petroleum Naptha (UN1255)
. Hazard Class	Combustible
. Hazardous Waste Number	D001
. Other	
. Hauler/ID	Environmental Waste Control MID057002602
. Disposer/ID	Wayne Disposal MID048090633

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ROUGE STEEL COMPANY
HAZARDOUS WASTE PLAN
EMERGENCY RESPONSE*

Material:

Guide Number: 27

FIRE OR EXPLOSION

Flammable/combustible material; may be ignited by heat, sparks or flames.
Vapors may travel to a source of ignition and flash back.
Container may explode in heat of fire.
Vapor explosion hazard indoors, outdoors or in sewers.
Runoff to sewer may create fire or explosion hazard.

HEALTH HAZARDS

May be poisonous if inhaled or absorbed through skin.
Vapors may cause dizziness or suffocation.
Contact may irritate or burn skin and eyes.
Fire may produce irritating or poisonous gases.
Runoff from fire control or dilution water may cause pollution.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Stay upwind; keep out of low areas.
Wear self-contained (positive pressure if available) breathing apparatus and full protective clothing.
Isolate for 1/2 mile in all directions if tank car or truck is involved in fire.
FOR EMERGENCY ASSISTANCE CALL Rouge Fire Dept at 23313
If water pollution occurs, notify appropriate authorities.

FIRE

Small Fires: Dry chemical, CO₂, water spray or foam.
Large Fires: Water spray, fog or foam.
Move container from fire area if you can do it without risk.
Cool containers that are exposed to flames with water from the side until well after fire is out.
For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire.

SPILL OR LEAK

Shut off ignition sources; no flares, smoking or flames in hazard area.
Stop leak if you can do it without risk.
Use water spray to reduce vapors.
Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal.
Large Spills: Dike far ahead of spill for later disposal.

FIRST AID

Move victim to fresh air; call emergency medical care.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Wash skin with soap and water.
Remove and isolate contaminated clothing and shoes at the site.

*NOTE: This information is taken from the "1984 Emergency Response Guidebook;" Dept. of Transportation Publication DOT P 5800.3

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CONTINGENCY PLAN
Mineral Spirits

Mineral spirits is used as a degreasing fluid, paint brush cleaner and all-around oily parts cleaner. Most tanks holding mineral spirits are owned and maintained by the Safety-Kleen Company. Other tanks, Rotunda-type or Rouge Steel fabricated, are maintained by Safety-Kleen.

Spilled material is to be contained; held in one place and prevented from entering sewers or confined spaces. Collect this material with pumps or vacuum systems and return it to the original container. If absorbents must be used, put the wet absorbent material in a drum and mark as "Hazardous Waste, solid, n.o.s. - NA9189, ORM-E."

If the mineral spirits system is damaged - leaking reservoir, drum or tub, contain the spill and pump liquid mineral spirits to a clean holding drum. Absorbed mineral spirits should be handled as above. Notify Safety-Kleen to come out and repair their system. They should pump out the holding drum and return the mineral spirits to their site for reclamation.

Notify Security immediately of all mineral spirits spills.

LDING

PARKING

LOT NO. 54

IND. SAFETY OFFICE
(ABOVE)
LUNCH & LOCKER RM.
(BELOW)

OH AREA

OIL STORAGE

FUEL OIL
600,000
GALS.

FUEL OIL
237,000
GALS.

W-5
FUEL OIL
130,000
GALS.

OFFICE

STOR.

CABINETS
BNDP

SCALE
PITS

CONC.
MAT

MR. CRUSH

CONC.
MAT

SPARE PARTS STORAGE

S.K.

TRUCK REPAIR AREA

S.K. S.K.

SCRAP

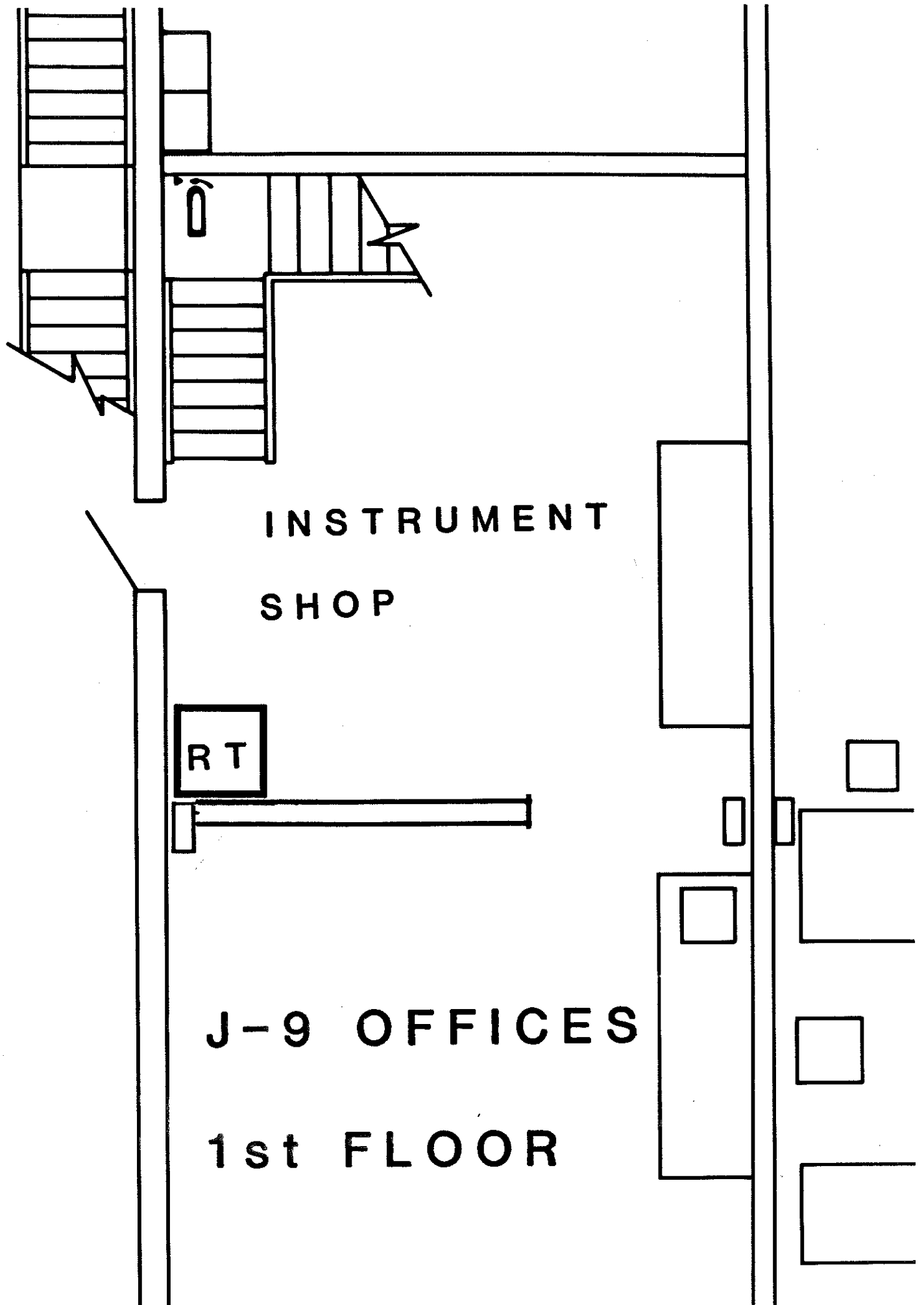
CONC.
WASH
MAT

ORE
STK
CUM
RUM

WATER
PUMP
BUTT
STOR

BUTT
STOR

SECTION



INSTRUMENT
SHOP

RT

J-9 OFFICES
1st FLOOR

SOAKING PIT CONTROL BALCONY ABOVE

COOLING BED

CRANE REPAIR
(2nd FLOOR)

RT

SK

RT

ELECTRICAL
(MEZZANINE)



MINERAL SPIRITS
DIP TANK

MECHANICAL
MAINTENANCE



AUTO
CARBON
DIOXIDE

J-9
OFFICES

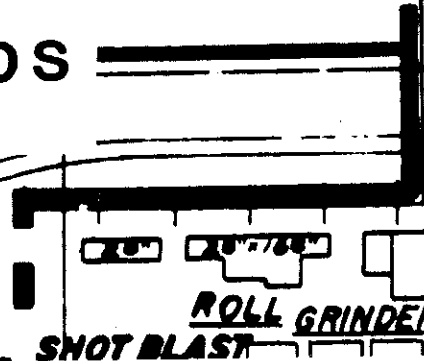
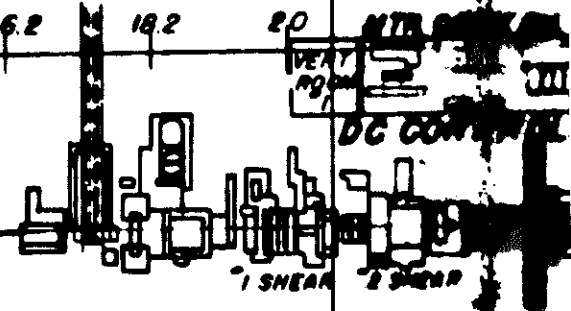


NYO
CELLAR

TOILET

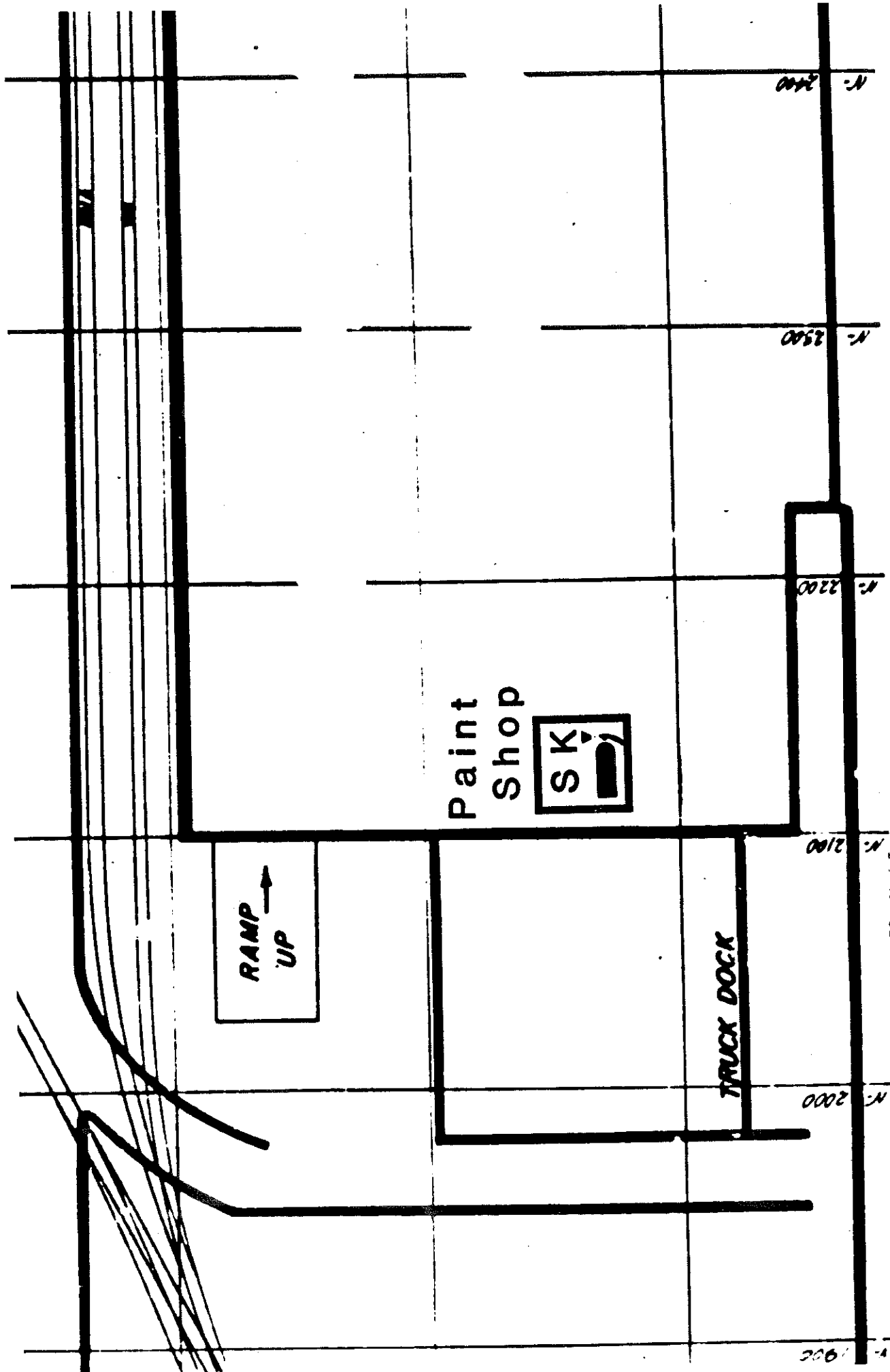
SUB. 846-84H
TRANS.

J-9 Shops



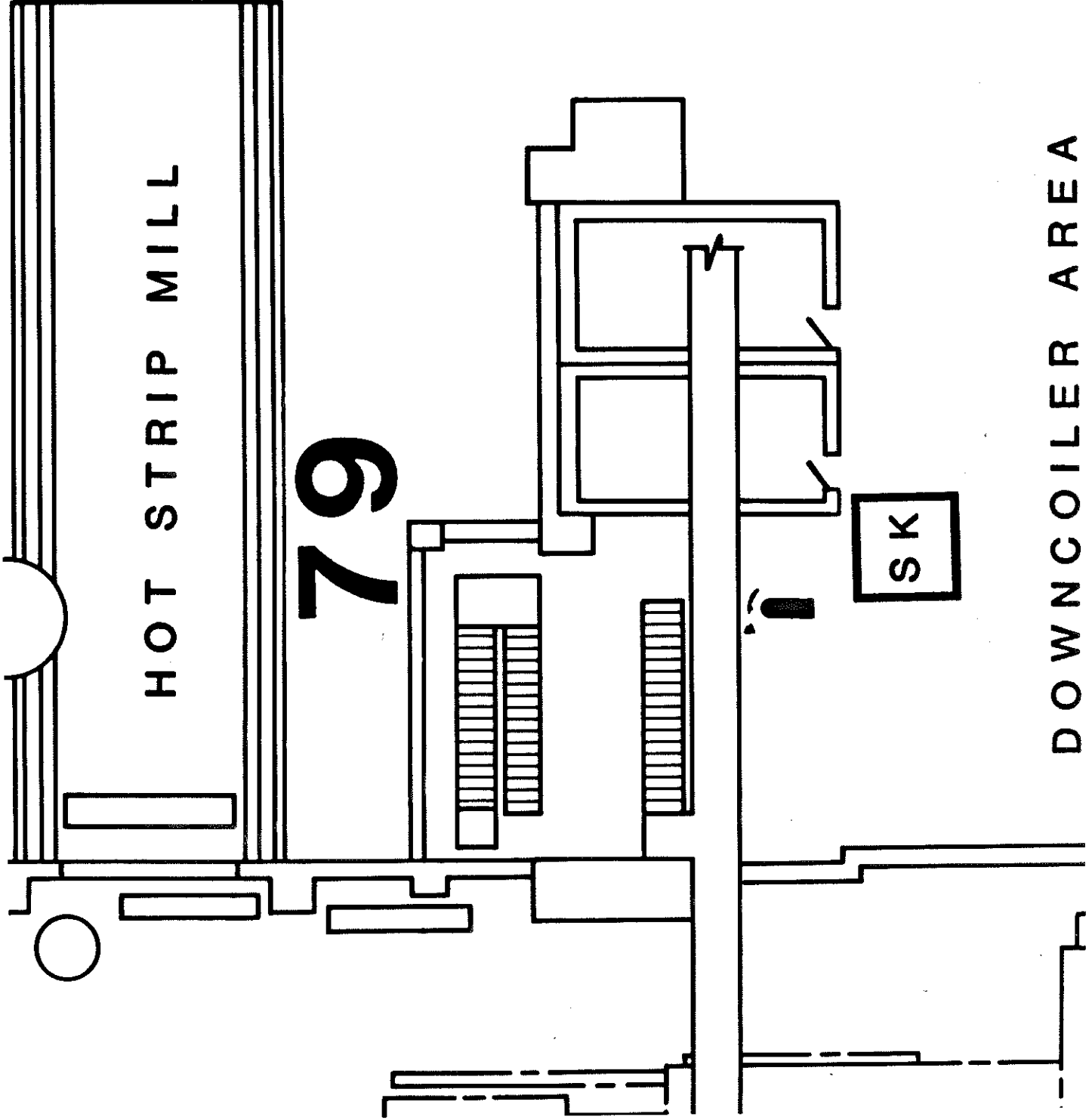
ROLL GRINDERS

SHOT BLAST



Paint Shop at ROW

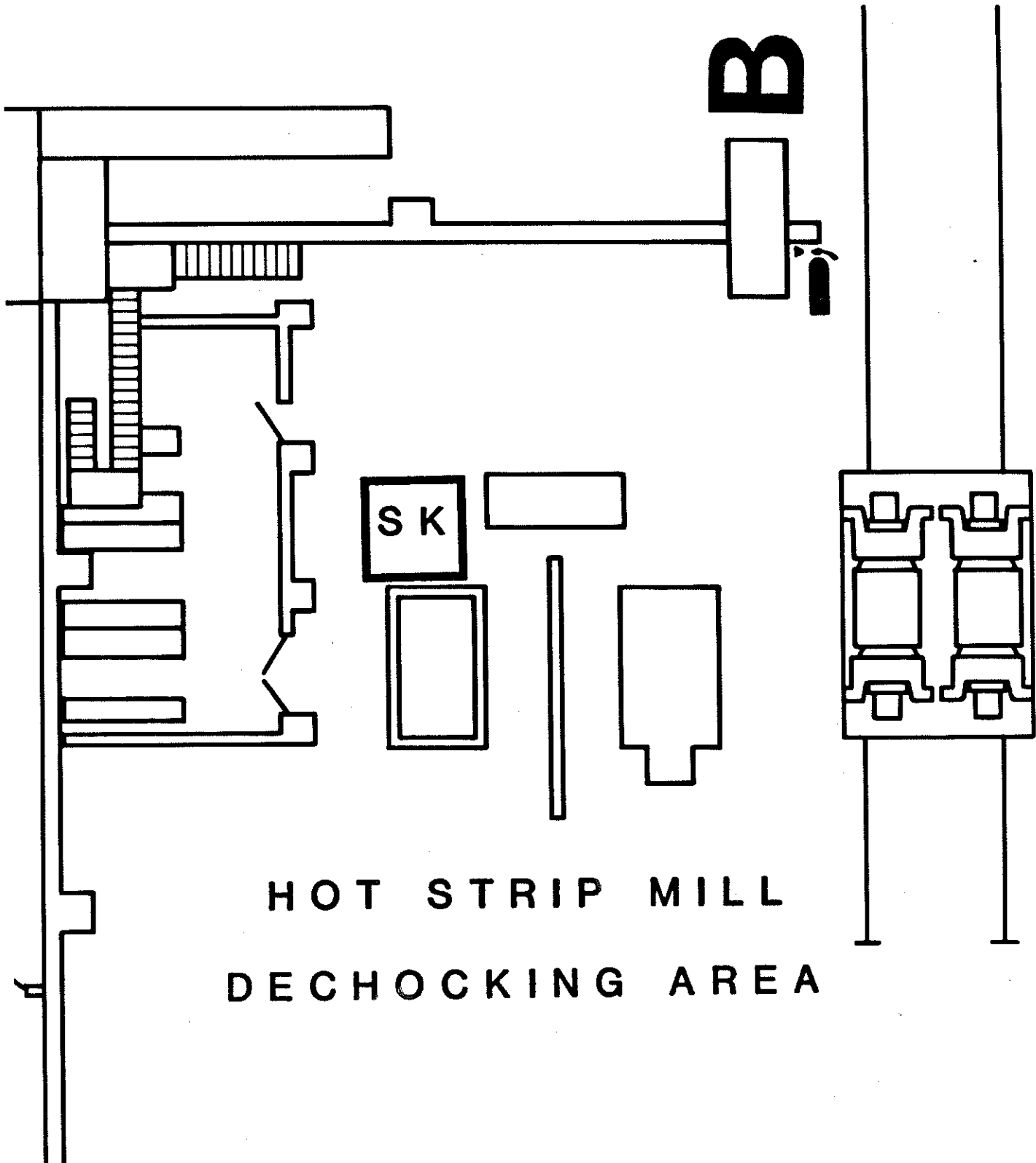
H



DOWNCOILER AREA

57

B



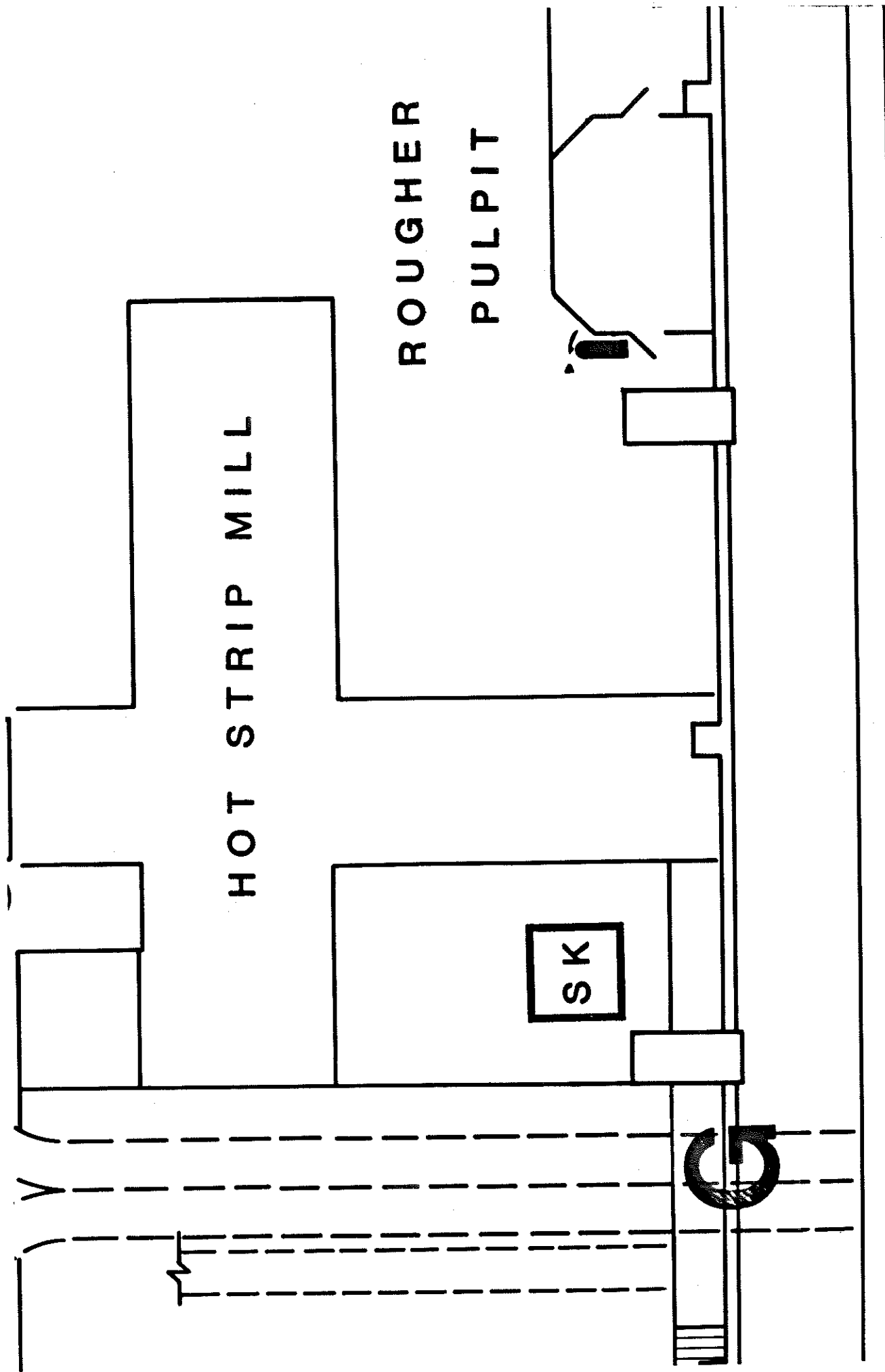
HOT STRIP MILL
DECHOCKING AREA

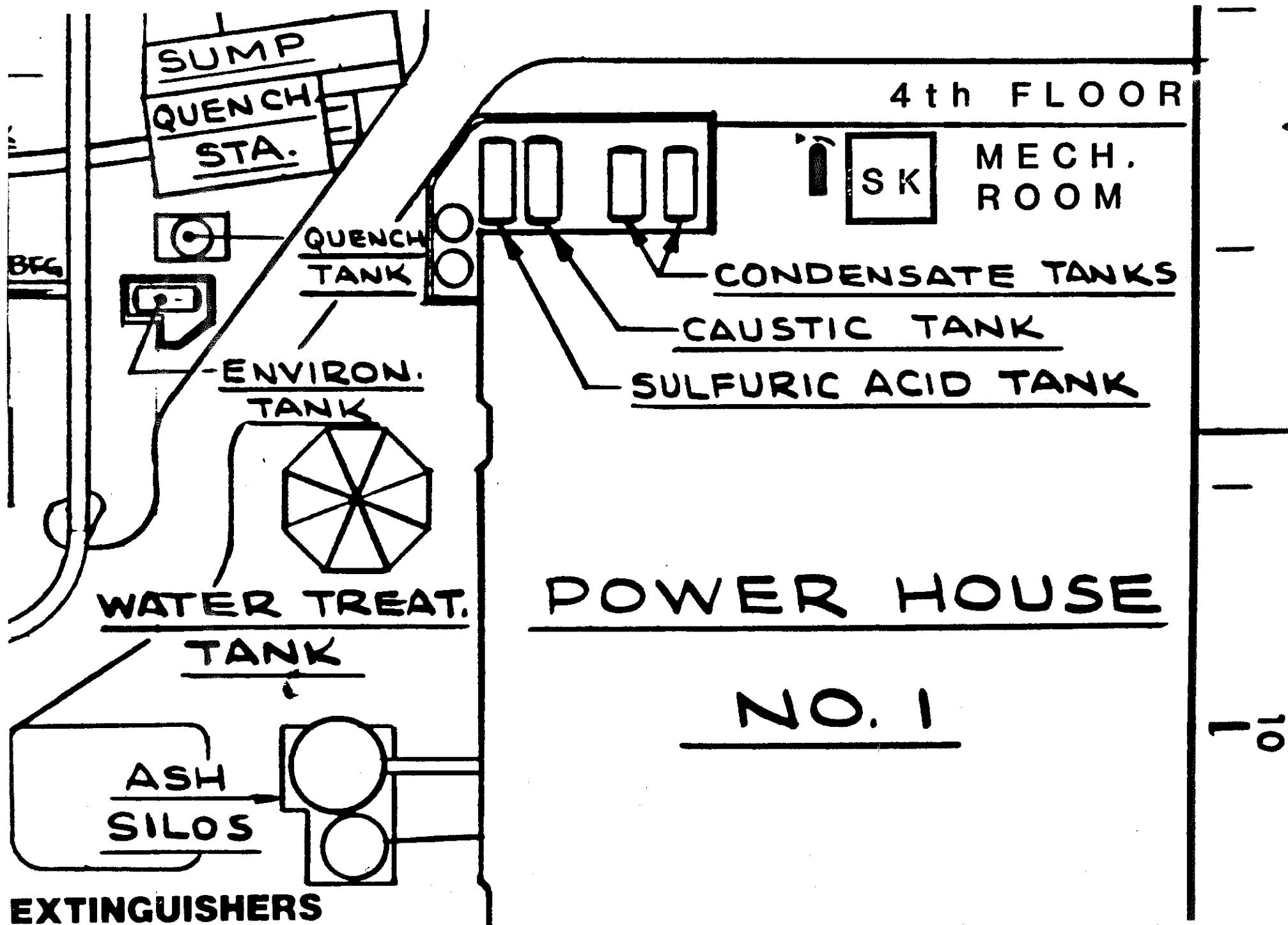
HOT STRIP MILL

ROUGHER
PULPIT

SK

20





HAZARDOUS MATERIALS INVENTORY

Material: Waste Pickle Liquor

Type of Storage: 3 - 40,000 gallon above ground rubber lined tanks, underlain by 5 feet of limestone.

Location: Pickle Acid Tank Farm, West of Steel Mills, F56.

Method of Disposal: Removed by commercial vendor at a rate of approximately one million gallons per month.

ROUGE STEEL COMPANY
SPCC/PIP PLAN
HAZARDOUS MATERIALS SUPPLEMENT

Hazardous Waste

Pickle Liquor

Description

This material is used as a surface treatment for finished steel. When wasted from the pickling tanks, it is stored in above ground tanks between the Steel Mill Plant and Slab Handling Yard.

Hazardous Characteristics

	<u>Lab #1</u>	<u>Lab #2</u>	<u>Hazardous ?</u>
. Ignitable	90°C		No
. Corrosive	1		Yes
. Reactive			
Unstable	-		No
Water	-		No
Acid	-		No
Caustic	-		No
Cyanide	0.29		No
Sulfide	9.1		No
Explosive	-		No
. Toxic			
Arsenic	0.345	0.1	No
Barium	0.05	0.1	No
Cadmium	0.02	0.1	No
Chromium	17.0	4.3	Yes
Lead	6.4	0.1	Yes
Mercury	0.004	0.03	No
Selenium	0.240	0.1	No
Silver	0.18	0.3	No

Transportation Information for Contaminated Clean Up Material

. DOT Name	Waste Acid, liquid, n.o.s. NA1760
. Hazard Class	Corrosive Material
. Hazardous Waste Number	K062
. Other	Contains Chromium (D007) and Lead (D008)
. Hauler/ID	Environmental Waste Control MID057002602
. Disposer/ID	Environmental Waste Control MID057002602

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ROUGE STEEL COMPANY
HAZARDOUS WASTE PLAN
EMERGENCY RESPONSE*

Material:

Guide Number: 60

HEALTH HAZARDS

Contact causes burns to skin and eyes.
If inhaled, may be harmful.
Fire may produce irritating or poisonous gases.
Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

Some of these materials may burn but none of them ignite readily.
Flammable/poisonous gases may accumulate in tanks and hopper cars.
Some of these materials may ignite combustibles (wood, paper, oil, etc.).

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Stay upwind; keep out of low areas.
Wear self-contained (positive pressure if available) breathing apparatus and full protective clothing.
FOR EMERGENCY ASSISTANCE CALL Rouge Fire Dept at 23313
If water pollution occurs, notify appropriate authorities.

FIRE

Some of these materials may react violently with water.
Small Fires: Dry chemical, CO₂, water spray or foam.
Large Fires: Water spray, fog or foam.
Move container from fire area if you can do it without risk.
Cool containers that are exposed to flames with water from the side until well after fire is out.

SPILL OR LEAK

Do not touch spilled material; stop leak if you can do it without risk.
Small Spills: Take up with sand or other noncombustible absorbent material and place into containers for later disposal.
Small Dry Spills: With clean shovel place material into clean, dry container and cover; move containers from spill area.
Large Spills: Dike far ahead of spill for later disposal.

FIRST AID

Move victim to fresh air; call emergency medical care.
Remove and isolate contaminated clothing and shoes at the site.
In case of contact with material, immediately flush skin or eyes with running water for at least 15 minutes.
Keep victim quiet and maintain normal body temperature.

*NOTE: This information is taken from the "1984 Emergency Response Guidebook;" Dept. of Transportation Publication DOT P 5800.3

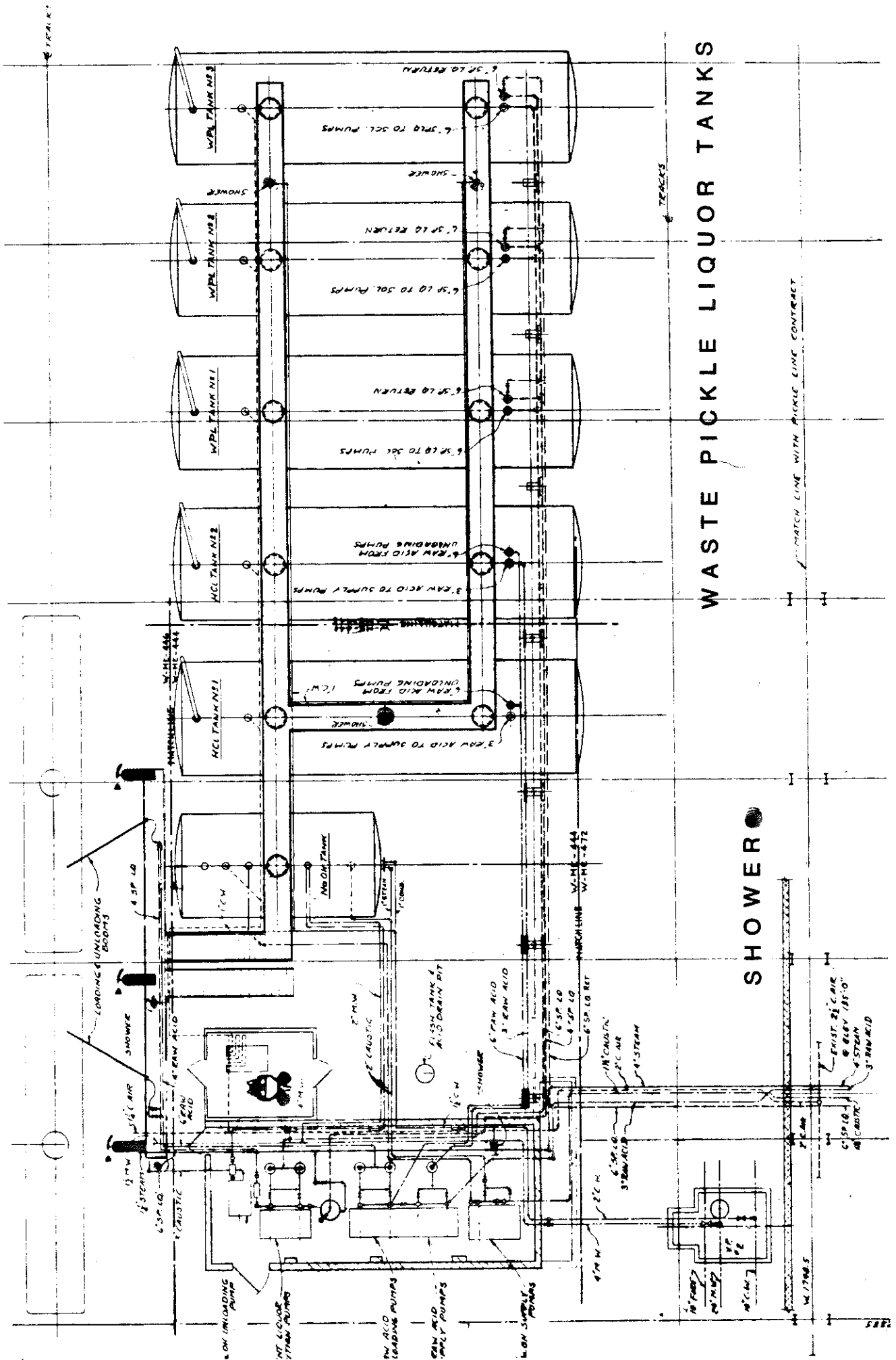
CONTINGENCY PLAN
Waste Pickle Liquor

The waste pickle liquor is a non-flammable, greenish liquid with an acidic odor, which is stored in three 40,000 gallon above ground, rubber lined steel tanks. These tanks, along with two similar sized tanks of fresh hydrochloric acid and a smaller tank of caustic soda, are underlain by a five foot deep bed (approximately 4,000 tons) of limestone. Assuming the limestone is 75 percent CaCO_3 , this quantity is theoretically capable of neutralizing approximately 800,000 gallons of pure hydrochloric acid, and thus sufficient to neutralize leaks from this system.

The acid Tank Farm is located West of the Steel Mills, Building F56. As such, it is physically isolated by both distance and the boat slip, from those wastes on-site which can generate toxic fumes when in an acidic solution. The facility is equipped with six dosing showers, two eye wash stations, and two fire extinguishers. Immediately adjacent to the tanks is the attendant's office, within which are found tank level gauges, telephone, two self-contained breathing apparatuses (SCBA), hard hat with face shield, acid gloves, and shovels.

There is a Tank Farm attendant on duty twenty-four hours per day. In the event of a major spill, he would first call the foreman, who would initiate the general contingency program. If the spill were to prevent the attendant from entering the office, there are two additional telephones within 100 yards of open area that could be used. As noted above, the Tank Farm is underlain by a bed of limestone sufficient to hold and neutralize the total contents of the Tank Farm. Should a small amount of the acidic material be splashed outside the limitations of the bed, a high volume hose is available to flood the surrounding area with water. The neutralized material would flow to the Schaefer Road Treatment Facility by means of existing sewers, and would ultimately discharge from the Treatment Plant outfall.

Any limestone losses resulting from a spill will be replaced by a stock of fresh limestone located approximately 50 yards from the Tank Farm. A front end loader is available from the Coke Plant, which could be brought to the Tank Farm within 10 to 15 minutes.



WASTE PICKLE LIQUOR TANKS

SHOWER

MATCH LINE WITH PICKLE LINE CONTRACT

HAZARDOUS MATERIALS INVENTORY

Material: Waste Halogenated Solvents
Type of Storage: DOT Approved Drums
Location: Powerhouse (1, 1, 1 Trichloroethane)
Oxygen Plant (Methylene Chloride)
Method of Disposal: Licensed Hauler as Needed; Sold for Reclaim

ROUGE STEEL COMPANY
SPCC/PIP PLAN
HAZARDOUS MATERIALS SUPPLEMENT

Hazardous Waste

1, 1, 1 Trichloroethane

Description

Power House maintenance shop uses this material as a degreasing fluid for small parts cleaning. These small amounts generally evaporate from part surfaces.

Hazardous Characteristics

. Ignitable

Lab #1

Lab #2

Hazardous ?

-

No

. Corrosive

-

No

. Reactive

Unstable

-

No

Water

-

No

Acid

-

No

Caustic

-

No

Cyanide

-

No

Sulfide

-

No

Explosive

-

No

. Toxic

Arsenic

-

No

Barium

-

No

Cadmium

-

No

Chromium

-

No

Lead

-

No

Mercury

-

No

Selenium

-

No

Silver

-

No

Note: This is a specifically listed waste.

Transportation Information for Contaminated Clean Up Material

. DOT Name

Waste 1, 1, 1 Trichloroethane
(UN2831)

. Hazard Class

ORM-A

. Hazardous Waste Number

F002

. Other

. Hauler/ID

Environmental Waste Control
MID057002602

. Disposer/ID

Wayne Disposal MID048090633

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sl24d

ROUGE STEEL COMPANY
SPCC/PIP PLAN
HAZARDOUS MATERIALS SUPPLEMENT

Hazardous Waste

Methylene Chloride

Description

Oxygen Plant uses this material in a dip degreaser for parts cleaning. As the solvent becomes laden with oily sludge, the unit is cleaned out. Waste material is stabilized and landfilled.

Hazardous Characteristics

Lab #1

Lab #2

Hazardous ?

. Ignitable	-		No
. Corrosive	-		No
. Reactive			
Unstable	-		No
Water	-		No
Acid	-		No
Caustic	-		No
Cyanide	-		No
Sulfide	-		No
Explosive	-		No
. Toxic			
Arsenic	-		No
Barium	-		No
Cadmium	-		No
Chromium	-		No
Lead	-		No
Mercury	-		No
Selenium	-		No
Silver	-		No

Note: This is a specifically listed waste.

Transportation Information for Contaminated Clean Up Material

. DOT Name	Waste Methylene Chloride (UN1593)
. Hazard Class	ORM-A
. Hazardous Waste Number	F002
. Other	
. Hauler/ID	Environmental Waste Control MID057002602
. Disposer/ID	Wayne Disposal MID048090633

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ROUGE STEEL COMPANY
HAZARDOUS WASTE PLAN
EMERGENCY RESPONSE*

Material:

Guide Number: 74

HEALTH HAZARDS

Vapors may cause dizziness or suffocation.
Exposure in an enclosed area may be very harmful.
Contact may irritate or burn skin and eyes.
Fire may produce irritating or poisonous gases.
Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

Some of these materials may burn but none of them ignite readily.
Most vapors are heavier than air.
Container may explode in heat of fire.

EMERGENCY ACTION

Keep unnecessary people away.
Stay upwind; keep out of low areas.
Wear self-contained (positive pressure if available) breathing apparatus and full protective clothing.
Isolate for 1/2 mile in all directions if tank car or truck is involved in fire.
Remove and isolate contaminated clothing at the site.
FOR EMERGENCY ASSISTANCE CALL Rouge Fire Dept at 23313
If water pollution occurs, notify appropriate authorities.

FIRE

Small Fires: Dry chemical or CO₂.
Large Fires: Water spray, fog or foam.
Stay away from ends of tanks.
Cool containers that are exposed to flames with water from the side until well after fire is out.

SPILL OR LEAK

Stop leak if you can do it without risk.
Shut off ignition sources; no flares, smoking or flames in hazard area.
Small Liquid Spills: Take up with sand, earth or other noncombustible absorbent material.
Large Spills: Dike far ahead of spill for later disposal.

FIRST AID

Move victim to fresh air; call emergency medical care.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Remove and isolate contaminated clothing and shoes at the site.
In case of contact with material, immediately flush eyes with running water for at least 15 minutes. Wash skin with soap and water.
Use first aid treatment according to the nature of the injury.

*NOTE: This information is taken from the "1984 Emergency Response Guidebook;" Dept. of Transportation Publication DOT P 5800.3

CONTINGENCY PLAN
Halogenated Solvents

Two halogenated solvents are used on site. The Power House maintenance area uses 1, 1, 1, Trichloroethane in cleaning solvents for small parts and electrical equipment. Methylene chloride is used as a dip cleaner in the Oxygen Plant.

Spills and leaks are to be contained; prevented from entering sewers or confined spaces. Contained liquids are to be pumped into clean drums and marked as hazardous waste: either

Waste 1, 1, 1 Trichloroethane - UN 2831, ORM-A, F001

or Waste Methylene Chloride - UN 1593, ORM-A, F001.

If absorbent is used to contain the spill, the contaminated absorbent must be disposed of as hazardous waste. Place contaminated absorbent in a drum and label the drum:

"Hazardous Waste, solid, n.o.s. - NA9189, ORM-E, F001"

Add to the label and shipping papers the note:

"Contains 1, 1, 1 Trichloroethane"

or "Contains Methylene Chloride"

Notify Security immediately of any spills of these materials.

EXISTING
COLD BOX

EXIST
TOTAL
WATER

B.H.2

EXIST
AIR
SUN

N

* METHYLENE CHLORIDE
DIP TANK

OXYGEN PLANT

COMPRESSOR BUILDING

EXIST. PIPE
SUPPORT FDN.

GEN.
AB

*

EXIST. PIPE
SUPPORT FDN.

6" DRAIN

4" DRAIN

A

EXIST. 100' 0" X 15' 0" X 10' 0"

ROUGE STEEL COMPANY
HAZARDOUS WASTE PLAN
TRAINING PROGRAM

Annual hazardous waste management training is required for all Rouge Steel employees who:

- . Handle hazardous waste
- . May handle hazardous waste
- . Supervise hazardous waste handlers
- . Bear responsibility for compliance with Hazardous Waste Regulations

Training is intended to comply with 40 CFR 262.34 (a) 4, 40 CFR 265 Parts C and D, and 40 CFR 265.16

Employees requiring annual training receive one hour of classroom training and general hazardous waste management and a handout with information specific to wastes encountered by each employee. A video tape of the classroom training is available (January, 1987) for employees to use as a refresher (voluntary) and as primary training for new employees and transfers.

Classroom training is developed and conducted by Rouge Steel Environmental Control personnel. The Training Program includes:

- . General environmental awareness
- . Company commitment to compliance
- . General hazard information and precautions
- . Specific information on handling each waste in emergency situations.

It is the intent of the program developers to provide more than the functional training required by regulation. The training should acquaint Rouge Steel employees with the connection between complying with regulations and the quality of their lives at work and at home. Compliance will be most readily and consistently achieved when all employees understand that compliance is in the best interests of the Company and its employees.

ROUGE STEEL COMPANY
HAZARDOUS WASTE PLAN
TRAINING LIST

GENERAL OFFICE

President
Vice President-Industrial Relations
Vice President-Engineering & Facilities
Vice President-Operations
Manager-Mfg & Environmental Engrg.
Manager-Environmental Control
Senior Environmental Engineer (3)
Environmental Control Engineer (4)

IRON MAKING OPERATION

Manager-Operations
Superintendent-Coke Ovens & By Products
Gen Supervisor-Oven Operation (4)
Supervisor-Ovens (10)
Gen Supervisor-Coal & Coke Handling
Supervisor-Yard Labor (1)
Gen Supervisor-By Products Operation (1)
Supervisor-By Products (4)
Supervisor - Gas Dept. (1)
Engineer-Steel Ops (1)
Super-Coke Ovens & By Prod Maint
Gen Supv-Environmental & Coke Ovens
Elec/Mech Maint (1)
Supv-Coke Ovens Maint (4)
Gen Supv-Coal Coke & By Products &
Projects Maint
Supv-Relief Maint. (2)
Supv-By Products Maint (1)
Supv-Coal & Coke Maint (1)

MELTING OPERATIONS

Manager-Melting Operations
Asst Mgr-Melting Operations
Super-Electric Furnace (1)
Gen Supv-Electric Furnace (1)
Supv-Melter (4)
Engineer-Steel Operations (1)
Superintendent-Maintenance (1)
Gen Supv-EAF Maintenance
Supv-Electric Furnace (4)

FINISHING OPERATIONS

Manager-Finishing Operations
Super-Hot Mills Maintenance (1)
Gen Supervisor-Mechanical (2)
Supervisor-Mechanical (8)
Superintendent-Cold Mills (1)
Gen Supv-Cold Rolling/Pickling (1)
Supervisor-Pickling (6)

INDUSTRIAL RELATIONS

Vice President- Industrial Relations
Manager-Hourly Personnel & Labor Rels Dept
Section Supv-Industrial Safety & Fire
Protection (1)
Office Clerk A
Safety Engineer Sr (3)
Safety Engineer B
Administrative Coord
Fire Prot Specialists (5)

POWER & UTILITIES

Manager-Operations
Superintendent-Production
Gen Supv-Oxygen Plant (1)
Supervisor-Oxygen Plant (3)
Mechanical Distribution & Maint
Gen Supv-Mech Maint (1)
Supv-Mech Maint (3)
Supv-Misc Shops (1)
Gen Supv-Mech Distr & Maint (1)
Supervisor-Mech Dist (4)
Supervisor-Mech Maint (1)

MISCELLANEOUS SHOPS

Superintendent-Misc Shops
Divn Maint Engr
Gen Supv-Crane & H1-Lo Repair Shops (1)
Supv-Crane Repair (5)
Supv-H1-Lo Shop (4)
Gen Supv-Electrical Shops (1)
Supv-Instrument Shop (4)
Supv-Carpenter Shop (1)

MARINE OPERATIONS

Superintendent-Marine Operations

ENVIRONMENTAL COORDINATORS

Basic Oxygen Furnace
Blast Furnace
Coke Ovens
Cold Mill
Electric Arc Furnace
Hot Strip Mill
Power House
Roll Shops
Slabbing Mill
Continuous Casting

ROUGE STEEL COMPANY
HAZARDOUS WASTE PLAN
TRAINING LIST

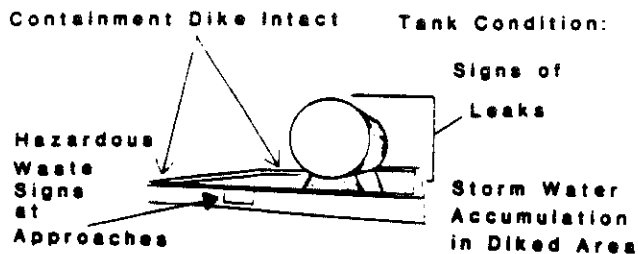
	Occ No.	Occupation Title	Maximum Crew Size		
			1	2	3
CRANE REPAIR - Dept. 1731	16	Millwright Apprentice	V	V	V
	50	Millwright Mechanic	5	18	5
	71	Millwright Apprentice	V	V	V
COLD MILL MAINTENANCE Dept. 1734	32	Plumber - Pipefitter	2	2	2
	37	Mill Maintenance	2	2	2
	68	Mill Maintenance	10	14	10
68" H.S.M. ASSIGN. MAINT. Dept. 1736	60	Mill Maintenance	0	1	0
	80	Mill Maintenance	0	1	0
	85	Electrician	0	1	0
ELECTRIC FURNACE MAINT. Dept 1743	50	Electrician	2	5	2
	51	Plumber-Pipefitter	2	2	2
	52	Millwright	3	6	3
	53	Welder-General	2	2	2
	54	Oiler	0	2	0
	55	Hydraulic Repair	1	1	1
PICKLING GENERAL Dept. 3650	37	Acid Tank Attendant	1	1	1
	60	Cleaner General #3 Pit & Sump	2	2	2
	61	Cleaner-Gen. Dept. Laborer Gr #2	4	4	4
	77	HCL Acid Farm Attendant	0	1	0
POWER - GENERAL Dept. 6701	15	Cleaner-General	0	10	0
	16	Cleaner-P.H. Utility	12	12	12
	17	Cleaner-P.H. Util. Leader	1	1	1

ELECTRICAL MAINTENANCE Dept. 6711	10	Cleaner-Lamp	0	1	0
MECHANICAL MAINTENANCE Dept. 6712	29	Water Purification System Maint.	0	1	0
	33	Machinist-All Around-Power House	0	9	0
	34	Machinist-All Around-Power House-DR	0	1	0
	36	Millwright	0	6	0
	37	Millwright-Leader	0	1	0
	56	Painter-Glazier-Leader	0	1	0
	57	Painter-Glazier	0	7	0
	58	Painter-Sign	0	1	0
MECHANICAL CONSTRUCTION & MAINTENANCE - Dept. 6717	33	Machinist-All Around-Power House	0	8	0
	34	Machinist-All Around-Power House-DR	0	2	0
	36	Millwright	0	1	0
	63	Plumber-Pipefitter-Apprentice	0	V	0
	66	Millwright Apprentice	0	V	0
WATER TREATMENT Dept. 6729	13	First Class Oper-Power House 1	1	1	1
	15	Second Class Oper-Power House #1	2	2	2
	61	Stationary Steam Apprentice	V	V	V
OXYGEN PLANT - Dept 6738	10	Power Serv-Heat, Steam, Air & Water	4	4	4
	11	Power Serv-Heat, Steam, Air & Water Ldr	1	1	1
	61	Stationary Steam Apprentice	0	1	0
TRANSMISSION & DIST. GEN'L Dept. 6740	15	Cleaner-General	0	9	0
	16	Cleaner-Power House-Utility	0	10	0
	17	Cleaner-Power House-Utility-Leader	0	1	0
ELECTRICAL DISTRIBUTION Dept. 6743	07	Power Electrician	0	2	0
	23	Power Electrician- Leader	0	1	0

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COKE OVENS YARD LABOR	30	Sprayer	0	1	0
Dept. 7030	33	Sump, Tank, Trench Cleaning	0	12	0
	34	Sump, Tank, Trench Cleaning-Leader	0	3	0
	50	Labor	2	9	2
	51	Labor-Utility	0	1	0
	56	Sweeper, Cleaner & Janitor	1	8	1
	58	Washer-Window (Scaffold)	0	2	0
COAL CHEMICAL-GENERAL	35	Apparatus Operator	2	3	2
Dept. 7250	45	Engineer-Licensed	1	2	1
COAL CHEMICAL-TAR	40	Light Oil Operator	0	1	0
Dept. 7251					
COAL CHEMICAL-CRUDE	25	Light Oil Operator	1	2	1
LITE OIL - Dept. 7252					
COAL CHEMICAL AMMONIUM	11	Sulphate Operator-Relief	1	1	1
SULPHATE - Dept. 7253	15	Sulphate-Operator	1	1	1
	30	A.C. Still Operator	1	1	1
COAL CHEMICAL NAPHTHALENE	10	Naphthalene Operator	1	1	1
Dept. 7255					
COAL CHEMICAL-MIXED GAS	45	Engineer-Licensed	2	2	2
DISTRIBUTION - Dept. 7260					
MIXED GAS DISTRIBUTION	11	Gas Dispatcher	1	1	1
SERVICE - Dept. 7261	22	Furnace Patrol	2	6	2
COAL CHEMICAL SULPHATE	31	Sulphate Dryer Operator-Leader	0	1	0
BAGGING - DEPT. 7270					

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Gas Line Drip Water Tank
N. Quench Tower

Hazardous Waste Inspection

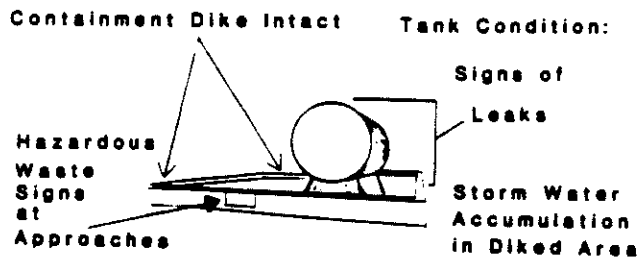
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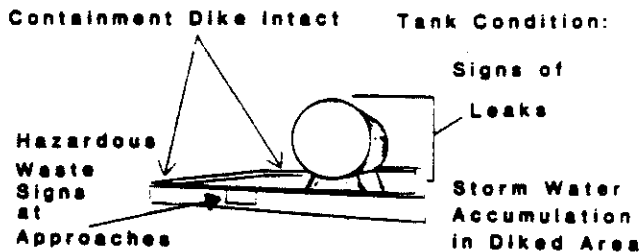
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Dept #

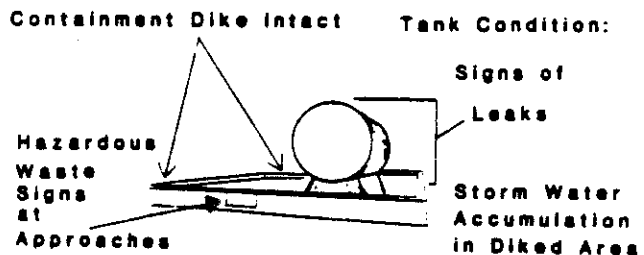
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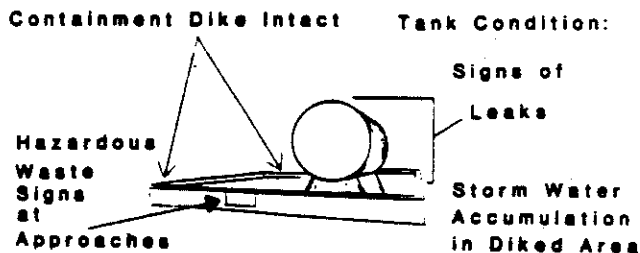
Gas Line Drip Water Tank
XX Bldg North



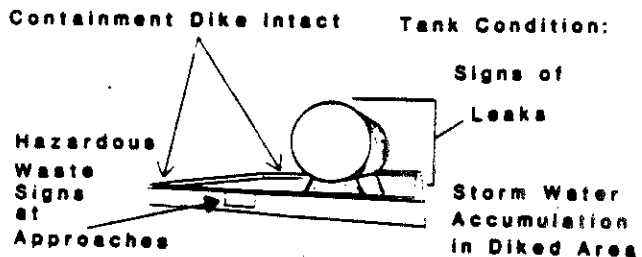
Gas Line Drip Water Tank
EE Bldg N.E. Corner



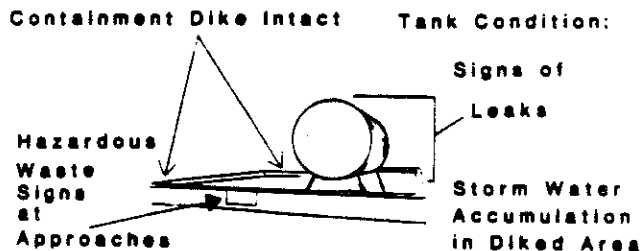
Gas Line Drip Water Tank
XX Bldg South



Gas Line Drip Water Tank
West Head House



Gas Line Drip Water Tank
Coal & Coke Lab



Gas Line Drip Water Tank
Gas Holder

Hazardous Waste
Inspection

Week Of: - -

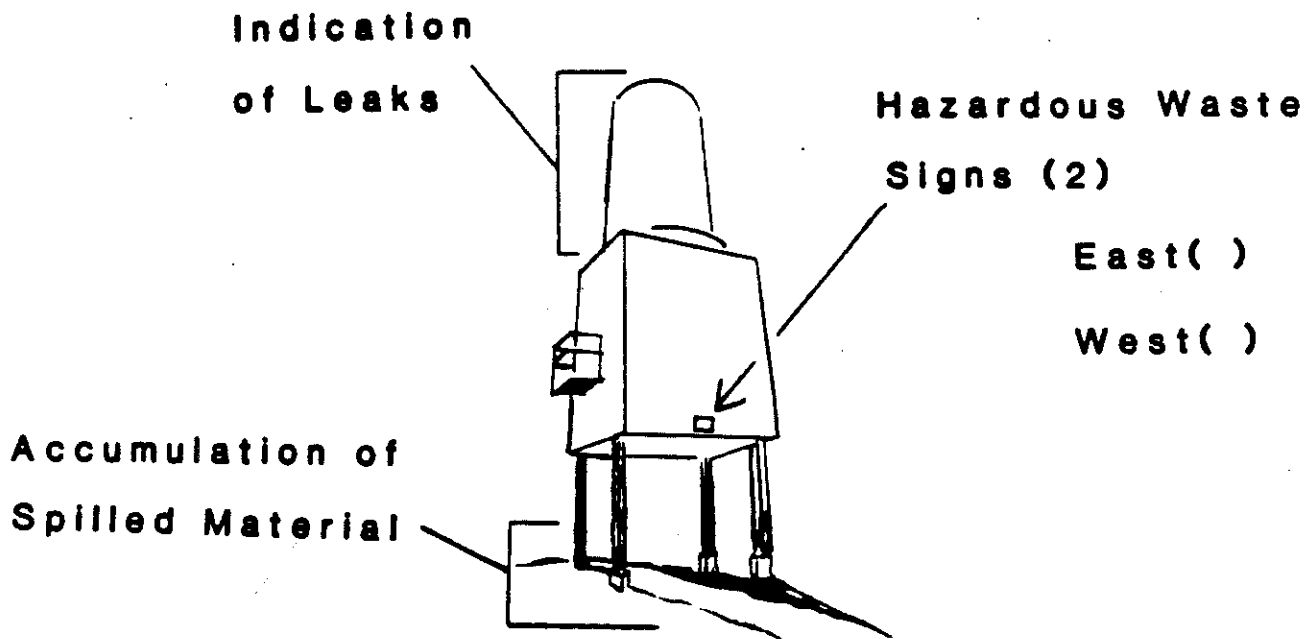
Name:

Date:

Dept #

11-9.5d

Silo Condition:



Electric Arc Furnace
Baghouse Dust Silo

Hazardous Waste
Inspection

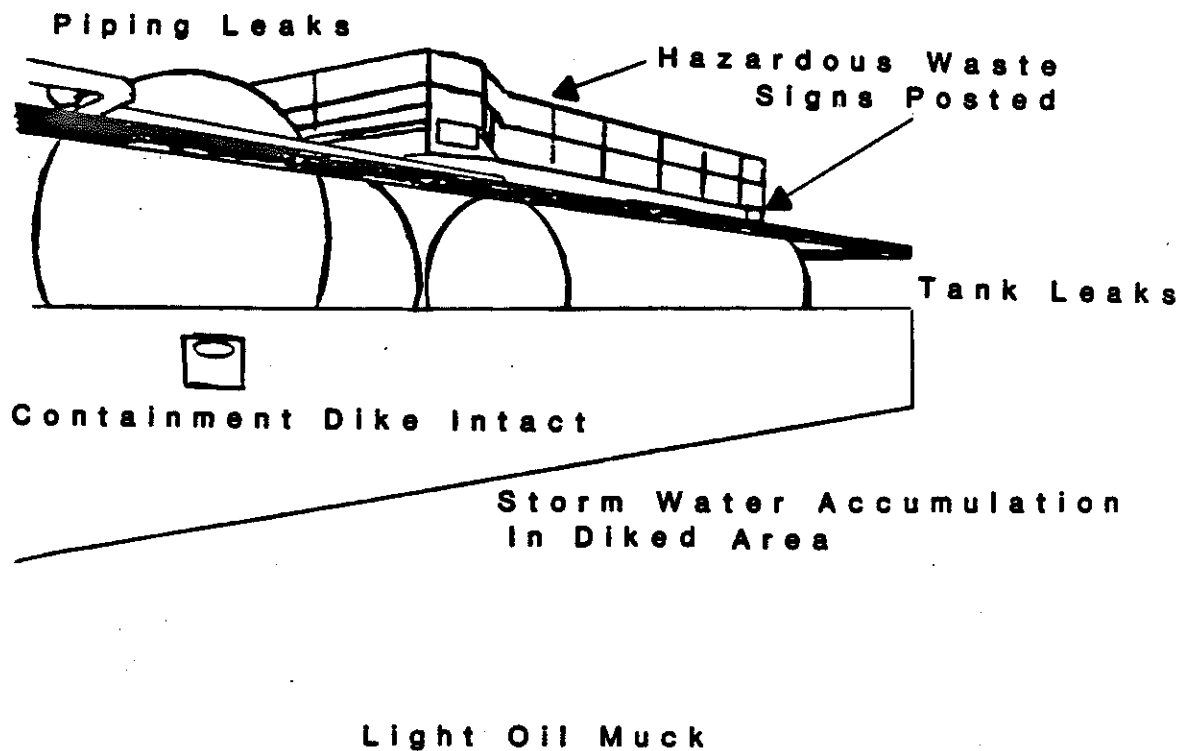
Week Of: - -

Name:

Date:

Dept #

11-9.5c



Hot Strip Mill

Hazardous Waste Inspection

Week Of: - -

Name:

Date:

Dept #

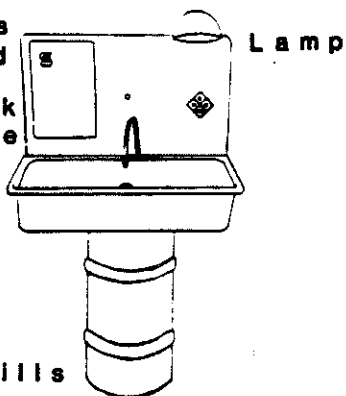
11-9.5d

Instructions
Posted

Fusible Link
In Place

Hose/
Fittings OK

Signs Of
Leaks/Spills



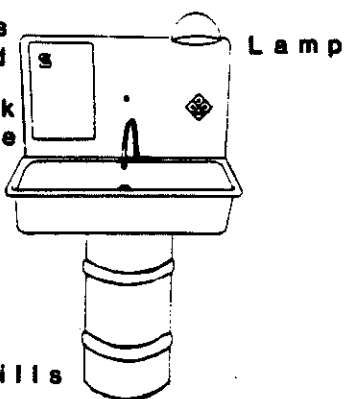
B54

Instructions
Posted

Fusible Link
In Place

Hose/
Fittings OK

Signs Of
Leaks/Spills



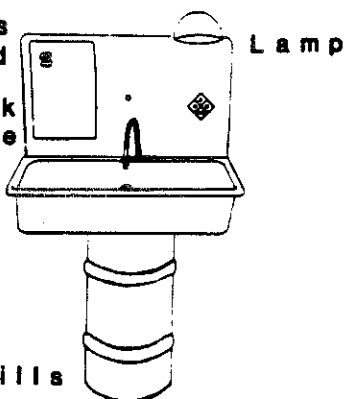
G32

Instructions
Posted

Fusible Link
In Place

Hose/
Fittings OK

Signs Of
Leaks/Spills



H78

OH Area Truck Garage

Hazardous Waste
Inspection

Week Of: - -

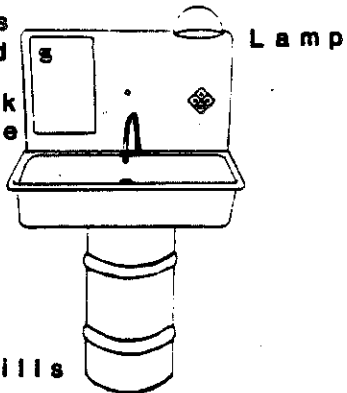
Name:

Date:

Dept #

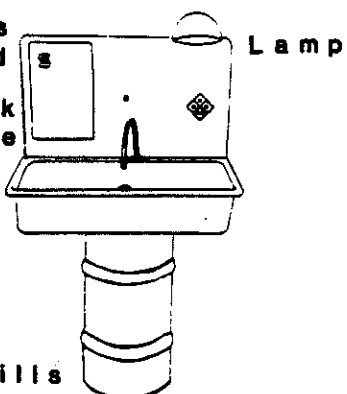
11-9.5d

Instructions
Posted
Fusible Link
In Place
Hose/
Fittings OK
Signs Of
Leaks/Spills



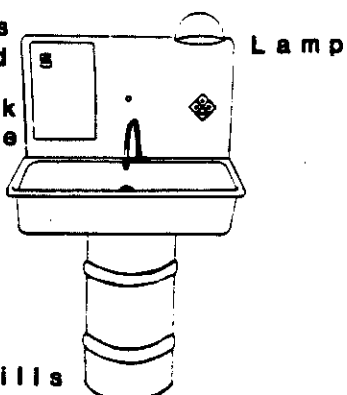
OH36

Instructions
Posted
Fusible Link
In Place
Hose/
Fittings OK
Signs Of
Leaks/Spills



OH41N

Instructions
Posted
Fusible Link
In Place
Hose/
Fittings OK
Signs Of
Leaks/Spills



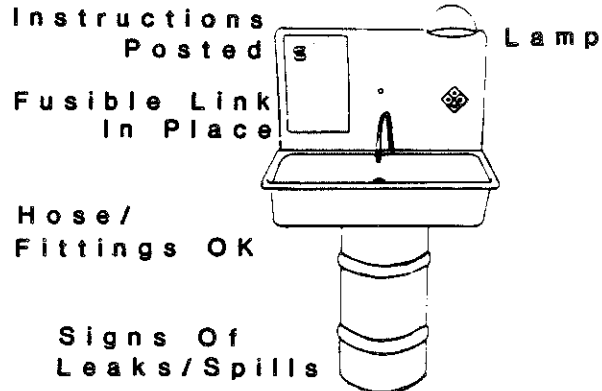
OH41S

Name:

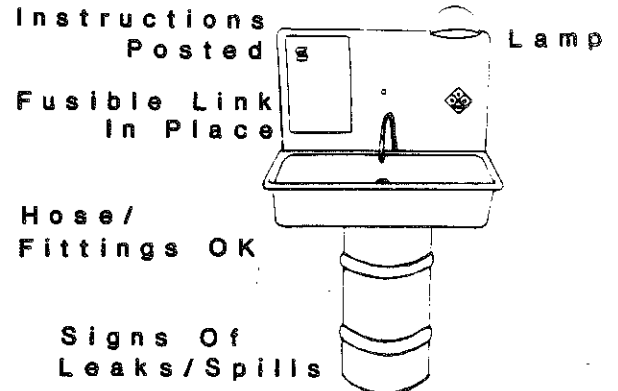
Date:

Dept #

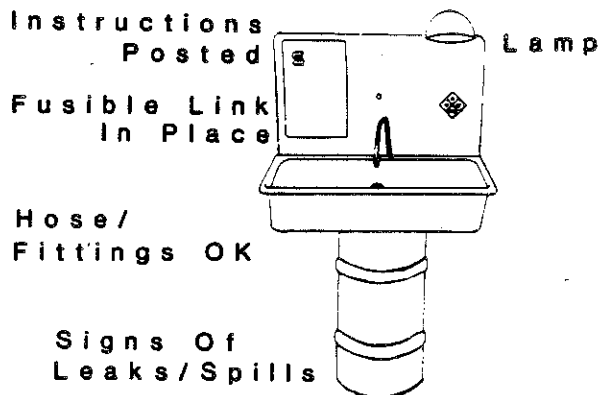
11-9.5d



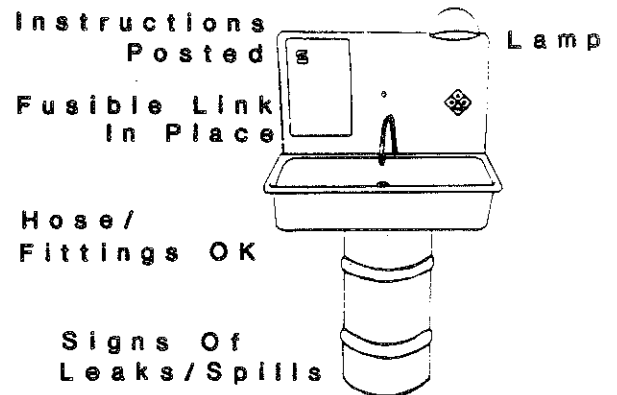
Instrument Shop



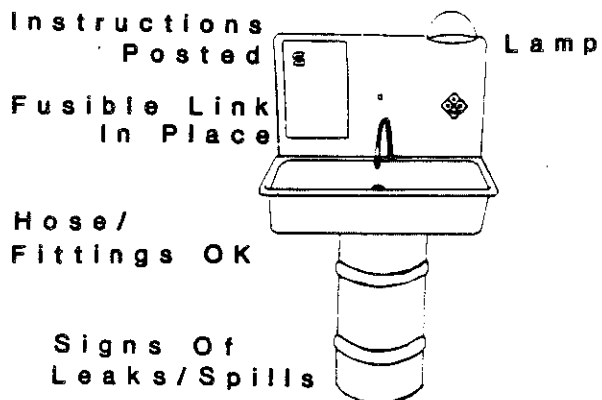
D14S



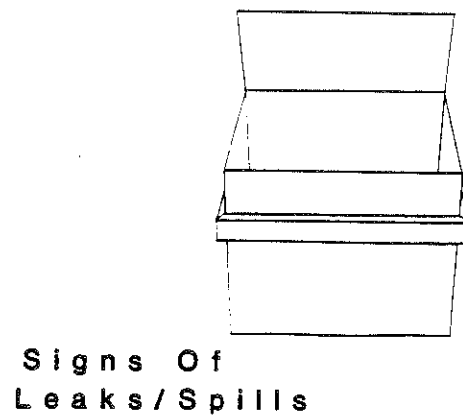
H17 Electrical Repair



J-9 Paint shop ROW



H19 Crane Repair



Hazardous Waste
Inspection

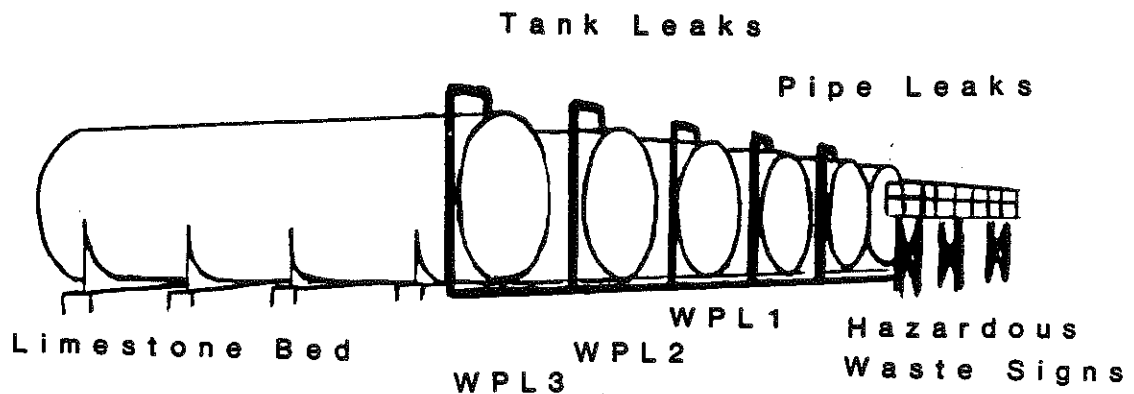
Week Of: - -

Name:

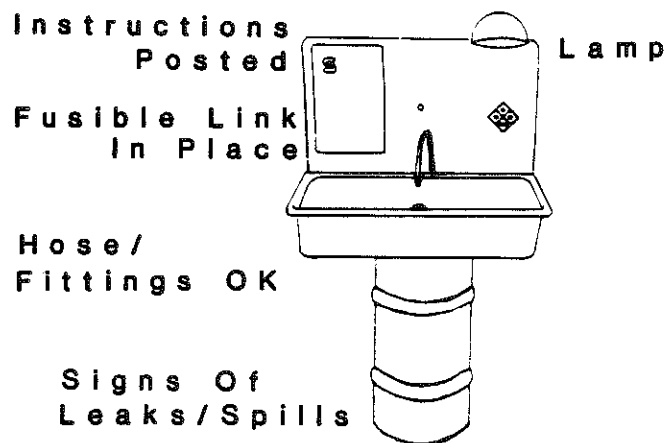
Date:

Dept #

11-9.5d



Waste Pickle Liquor Tanks



Y72

Truck Garage

Hazardous Waste

Storage Pad

Hazardous Waste Inspection

Week Of: - -

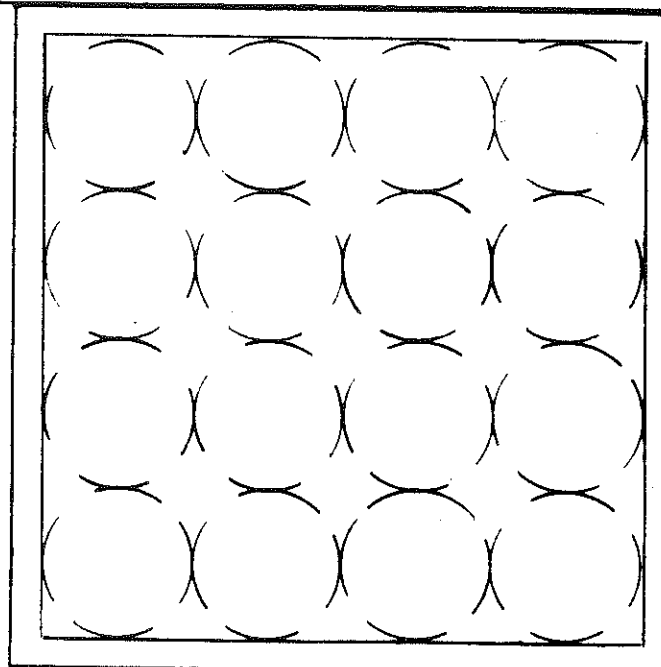
Name:

Date:

Dept #

11-9.5d

SUB 15



Containment
Dike Intact

Drums:

Label

Date

DOT Name

(fill in info for
each drum on pad)

Storm Water Accumulation In Diked Area

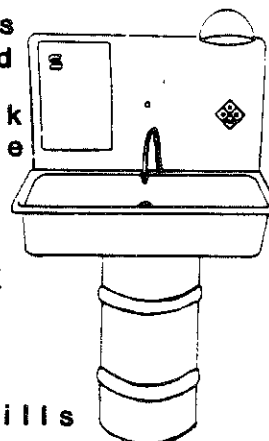
Power House Number 1

Instructions
Posted

Fusible Link
In Place

Hose/
Fittings OK

Signs Of
Leaks/Spills



Lamp

4th Floor Machine Shop

U.S. ENVIRONMENTAL PROTECTION AGENCY

MINOR - MODIFIED
UNDERGROUND INJECTION CONTROL PERMIT

CLASS I HAZARDOUS

PERMIT NUMBER MI-163-1W-0002

ROUGE STEEL COMPANY

DEARBORN, MICHIGAN



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
230 SOUTH DEARBORN ST.
CHICAGO, ILLINOIS 60604

U.S. ENVIRONMENTAL PROTECTION AGENCY

REPLY TO THE ATTENTION OF:

UNDERGROUND INJECTION CONTROL PERMIT: CLASS I

Permit Number MI-163-1W-0002

EPA ID Number MID087738431

Pursuant to the Underground Injection Control regulations of the U.S. Environmental Protection Agency codified at Title 40 of the Code of Federal Regulations, Parts 124, 144, 146, and 147, Rouge Steel Company, 3001 Miller Road, P.O. Box 1699, Dearborn, Michigan is hereby authorized to operate a Class I injection well located in Michigan, Wayne County, R11E, T2S, Section 28, NW 1/4, into the Munising Formation upon the express conditions that the permittee meet the restrictions set forth herein.

All references to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit is effective. The following attachments are incorporated into this permit: A, B, C, D, E, and F.

This permit is a minor modification of an existing permit which has an expiration date of midnight, October 30, 1990. This minor modified permit shall become effective on the date of issuance by the Director and shall supercede the existing permit upon issuance. This permit shall remain in full force and effect during the life of the permit, unless 1) the statutory provisions of section 3004(f), (g) or (m) of the Resource Conservation and Recovery Act ban or otherwise condition the authorizations in this permit; 2) the Agency promulgates rules pursuant to these sections which withdraw or otherwise condition the authorizations in this permit; or 3) this permit is otherwise revoked, terminated, modified or reissued pursuant to 40 CFR § 144.39 or § 144.40.

This permit and the authorization to inject shall expire at midnight, October 30, 1990, unless terminated.

Signed this 22nd day of April, 1986.

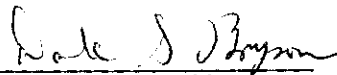

for Charles H. Sutfin
Director, Water Division

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PART I
GENERAL PERMIT COMPLIANCE

A. EFFECT OF PERMIT

The permittee is allowed to engage in underground injection in accordance with the conditions of this permit. Notwithstanding any other provisions of this permit, the permittee authorized by this permit shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of injection, annulus or formation fluid into underground sources of drinking water. The objective of this permit is to prevent the introduction of contaminants into underground sources of drinking water if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 142 or may otherwise adversely affect the health of persons. Any underground injection activity not specifically authorized in this permit is prohibited. Compliance with this permit during its term constitutes compliance, for purposes of enforcement, with Part C of the Safe Drinking Water Act (SDWA). Such compliance does not constitute a defense to any action brought under Section 1431 of the SDWA, or any other common or statutory law other than Part C of the SDWA. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Nothing in this permit shall be construed to relieve the permittee of any duties under applicable regulations.

This permit does not relieve owners and operators of hazardous waste injection wells of their obligation to comply with any additional regulations or requirements under the Resource Conservation and Recovery Act (RCRA). This permit does not authorize any above ground generating, handling, storage, treatment or disposal facilities. Such activities must receive authorization under the regulations promulgated pursuant to Part C of the Resource Conservation and Recovery Act.

B. PERMIT ACTIONS

1. Modification, Revocation, Reissuance and Termination.

The Director may, for cause or upon request from the permittee, modify, revoke and reissue, or terminate this permit in accordance with 40 CFR §144.12, §144.39, and §144.40. Also, the permit is subject to minor modifications for cause as specified in 40 CFR §144.41. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes, or anticipated noncompliance on the part of the permittee does not stay the applicability or enforceability of any permit condition.

2. Transfer of Permits. This is not transferable to any person except in accordance with 40 CFR §144.38.

C. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any

circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

D. CONFIDENTIALITY

In accordance with 40 CFR Part 2 and §144.5, any information submitted to the United States Environmental Protection Agency (USEPA) pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, USEPA may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures in 40 CFR Part 2 (Public Information). Claims of confidentiality for the following information will be denied:

1. The name and address of the permittee;
 2. Information which deals with the existence, absence or level of contaminants in drinking water.
-

E. DUTIES AND REQUIREMENTS

1. Duty to Comply. The permittee shall comply with all applicable Underground Injection Control (UIC) Program regulations and conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued in accordance with §144.34. Any permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and

reissuance, modification, or for denial of a permit renewal application. Such noncompliance may also be grounds for enforcement action under the RCRA.

2. Penalties for Violations of Permit Conditions. Any person who violates a permit requirement is subject to civil penalties, fines and other enforcement action under the SDWA and may be subject to such actions pursuant to the RCRA. Any person who willfully violates permit conditions may be subject to criminal prosecution.

3. Continuation of Expiring Permits.

(a) Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must submit a complete application for a new permit at least 180 days before this permit expires.

(b) Permit Extensions. The conditions of an expired permit may continue in force in accordance with 5 U.S.C. 558 (c) and 40 CFR §144.37.

(c) Effect. Permits continued under 5 U.S.C. 558 (c) and 40 CFR §144.37 remain fully effective and enforceable.

(d) Enforcement. When the permittee is not in compliance with the conditions of the expiring or expired permit the Director may choose to do any or all of the following:

- (1) Initiate enforcement action based upon the permit which has been continued;

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(2) Issue a notice of intent to deny the new permit. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operation without a permit;

(3) Issue a new permit under 40 CFR Part 124 with appropriate conditions; or

(4) Take other actions authorized by Underground Injection Control regulations.

(e) State Continuation. A USEPA-issued permit does not continue in force beyond its expiration date under Federal law if at that time a State has primary enforcement responsibility under the SDWA. A State authorized to administer the UIC program may continue either USEPA- or State-issued permits until the effective date of the new permits, if State law allows. Otherwise, the facility or activity is operating without a permit from the time of expiration of the old permit to the effective date of the State-issued new permit. Furthermore, if the State does not continue the USEPA permit upon obtaining primary enforcement responsibility, the permittee must obtain a new State permit or be authorized to inject by State rule or he will be injecting without authorization.

4. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for the permittee in an enforcement action, to claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

5. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

6. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

7. Duty to Provide Information. The permittee shall furnish to the Director, within a time specified, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

8. Inspection and Entry. The permittee shall allow the Director or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:

- (a) Enter, at reasonable times, upon the permittee's premises where a regulated facility or activity is located or conducted,

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or where records are kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that are kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any facilities, equipment or operations regulated or required under this permit.

9. Records.

(a) The permittee shall retain records and all monitoring information, including all calibration and maintenance records and all original chart recordings for continuous monitoring instrumentation and copies of all reports required by this permit for a period of at least five (5) years from the date of the sample, measurement or report, unless these materials are submitted to the Director as part of reporting requirements under this permit.

(b) The permittee shall maintain records of all data required to complete the permit application form for this permit and any supplemental information submitted under 40 CFR §144.27, §144.28,

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(c) The permittee shall retain records concerning the nature and composition of all injected fluids until three (3) years after the completion of plugging and abandonment.

(d) The retention period specified in Permit Condition E 9 (a) through (c) above may be extended by request of the Director at any time. The permittee shall continue to retain records after the retention period specified in Permit Condition E 9 (a) through (c) or any requested extension thereof expires unless he delivers the records to the Director or obtains written approval from the Director to discard the records.

(e) Records of monitoring information shall include:

- (1) The date, exact place, and time of sampling or measurements;
- (2) The individual(s) who performed the sampling or measurements;
- (3) A precise description of both sampling methodology and the handling of samples;
- (4) The date(s) analyses were performed;
- (5) The names of individual(s) who performed the analyses;
- (6) The analytical techniques or methods used; and
- (7) The results of such analyses.

-10-

10. Monitoring. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Monitoring results shall be reported at the intervals contained in Part II (E 1-3) and in Attachment E of this permit.

(a) Monitoring of the nature of injected fluids shall comply with applicable analytical methods cited and described in Table I of 40 CFR §136.3 or in Appendix III of 40 CFR Part 261 or in certain circumstances by other methods that have been approved by the Director.

(b) Sampling and analysis shall comply with the specifications of the Waste Analysis Plan required in Part II (D 3) of this permit.

11. Signatory Requirements. All reports or other information, required to be submitted by this permit or requested by the Director shall be signed and certified in accordance with 40 CFR §144.32.

12. Reporting Requirements.

(a) Planned Changes. The permittee shall give written notice to the Director as soon as possible, of any planned physical alterations or additions to the permitted facility, other than minor repair/replacement maintenance activities.

(b) Anticipated Noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

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(c) Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule to this permit shall be submitted no later than thirty (30) working days following each schedule date.

(d) Twenty-four Hour Reporting.

(1) The permittee shall report to the Director any permit noncompliance which may endanger health or the environment. Any information shall be provided orally within twenty-four (24) hours from the time the permittee becomes aware of the circumstances. Such reports shall include, but not be limited to the following information:

(i) Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water.

(ii) Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between underground sources of drinking water.

(2) A written submission shall also be provided within five (5) working days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to

-12-

continue; and steps taken or planned to reduce, eliminate and prevent recurrence of the noncompliance.

(e) Other Noncompliance. The permittee shall report all other instances of noncompliance not otherwise reported at the time monitoring reports are submitted. The reports shall contain the information listed in Permit Condition E 12(d)(2) above.

(f) Other Information. When the permittee becomes aware that he failed to submit any relevant facts in the permit application or submitted incorrect information in a permit application or in any report to the Director, the permittee shall submit such facts or information within ten (10) working days.

(g) Report on Permit Review. Within thirty (30) working days of receipt of this permit, the permittee shall report to the Director that he has read and is personally familiar with all terms and conditions of this permit.

(h) Reporting Requirements Under the RCRA. The permittee shall also comply with applicable federal regulations under the Resource Conservation and Recovery Act. These include, but are not limited to, 40 CFR §264.117, §264.119, §264.120 and the General Facility Standards described in §264 Subpart B (§264.10 through §264.18).

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F. PLUGGING AND ABANDONMENT

1. Notice of Plugging and Abandonment. The permittee shall notify the Director no later than forty-five (45) working days before conversion or abandonment of the well.
2. Plugging and Abandonment. The permittee shall plug and abandon the well consistent with 40 CFR §146.10, as provided for in the plugging and abandonment plan contained in Attachment A of this permit. Within sixty (60) working days after plugging a well, or at the time of the next quarterly report (whichever is shorter), the permittee shall submit a report to the Director. The report shall be certified as accurate by the person who performed the plugging operation, and shall consist of either:
 - (a) A statement that the well was plugged in accordance with the plan previously submitted to the Director; or
 - (b) If the actual plugging differed from the approved plan, a statement defining the actual plugging and explaining why the Director should approve such deviation. Any deviation from a previously approved plan which may endanger underground sources of drinking water is cause for the Director to require the operator to replug the well.
3. Inactive Wells. After cessation of injection for two (2) years the permittee shall plug and abandon the well in accordance with the plan and 40 CFR §144.52 (a)(6) unless the permittee has:

-14-

- (a) Provided notice to the Director; and
- (b) Described actions or procedures, which are deemed satisfactory by the Director, that the permittee will take to ensure that the well will not endanger underground sources of drinking water during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived, in writing, by the Director.

4. Revision of Plugging and Abandonment Plan. If the plugging and abandonment plan should change, a revised plan shall be submitted to the Director for approval at the time of the next monthly report. Once approved, the revised plugging and abandonment plan will replace the original plan as part of this permit.

G. MECHANICAL INTEGRITY

- 1. Standards. The injection well must have and maintain mechanical integrity consistent with 40 CFR §146.8.
- 2. Subsequent Mechanical Integrity Demonstrations. A demonstration of mechanical integrity in accordance with 40 CFR §146.8 shall be made biennially from the date of the last approved demonstration. Mechanical integrity shall also be demonstrated any time the tubing is removed from the well, the packer is reset, or loss of mechanical integrity becomes evident during operation. For workovers involving no modification

to the cement or completed interval, mechanical integrity shall be demonstrated using a test outlined in 40 CFR §146.8 (b). The permittee shall notify the Director of his intent to demonstrate mechanical integrity at least thirty (30) working days prior to such demonstration. The permittee shall report the results of a mechanical integrity demonstration within ninety (90) working days after completion thereof.

3. Gauges. All gauges used in mechanical integrity demonstrations shall be calibrated according to the procedures of The National Bureau of Standards to an accuracy of not less than one-half percent (0.5%) of full scale, initially and annually thereafter. A copy of the calibration certificate shall be submitted to the Director or his representative at the time of demonstration.

4. Loss of Mechanical Integrity. If the permittee or the Director finds that the well fails to demonstrate mechanical integrity during a test, or a loss of mechanical integrity as defined by 40 CFR §146.8 becomes evident during operation, the permittee shall halt the operation immediately and shall not resume it until the Director gives approval to recommence injection.

5. Mechanical Integrity Request from the Director. The Director may by written notice require the permittee to demonstrate mechanical integrity at any time.

H. FINANCIAL RESPONSIBILITY

1. Cost Estimate for Plugging and Abandonment. The permittee estimates the present cost of plugging and abandonment of the permitted well as \$45,000, according to the plan contained in Attachment A.
2. Financial Responsibility. The permittee is required to maintain responsibility and resources to close, plug, and abandon the underground injection operation in a manner consistent with 40 CFR §144.52 (a)(7) and 40 CFR §144.60 through §144.70. The financial assurance mechanism is provided in Attachment D of this permit.

(a) Pursuant to 40 CFR §144.62(a), the permittee must maintain a written cost estimate, in current dollars, for the plugging and abandonment plan as specified in 40 CFR §146.10. The plugging and abandonment cost estimate at any point in the life of the facility operation must equal the maximum cost of plugging and abandonment at that time.

(b) Pursuant to 40 CFR §144.62(b), the permittee must adjust the cost estimate of plugging and abandonment for inflation within thirty (30) working days after each anniversary of the first estimate. The inflation factor is prescribed in 40 CFR §144.62(b).

(c) The permittee must revise the plugging and abandonment cost estimate whenever a change in the plugging and abandonment plan increases the cost of plugging and abandonment. The revised plugging and abandonment estimate must be adjusted for inflation as specified above in Permit Condition H 2 (b) above.

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(d) If the revised plugging and abandonment estimate exceeds the current amount of the financial assurance mechanism, the permittee shall submit a revised mechanism to cover the increased cost within thirty (30) working days after the revision specified in Permit Conditions H 2 (b) and (c) above.

(e) The permittee must keep on file at the facility a copy of the latest plugging and abandonment cost estimate prepared in accordance with 40 CFR §144.62, during the operating life of the facility. Said estimate shall be available for inspection in accordance with the procedures in Permit Condition E 8 (b) above.

3. Insolvency. The permittee must notify the Director within ten (10) business days of any of the following events:

(a) The bankruptcy of the trustee or issuing institution of the financial mechanism, or

(b) Suspension or revocation of the authority of the trustee institution to act as trustee, or

(c) The institution issuing the financial mechanism losing its authority to issue such an instrument.

4. Notification. An owner or operator must notify the Director by certified mail of the commencement of voluntary or involuntary proceedings under Title 11 (Bankruptcy), U.S. Code naming the owner or operator as debtor, within ten (10) business days after the commencement of the proceeding. A guarantor of a corporate guarantee must make such a notification

-18-

if he is named as debtor, as required under the terms of the guarantee.

5. Establishing Other Coverage. The owner or operator must establish other financial assurance or liability coverage acceptable to the Director, within sixty (60) working days of the occurrence of the events in Permit Condition H 3 or H 4 above.
-

I. CORRECTIVE ACTION

1. Compliance. The permittee shall comply with the approved corrective action plan contained in Attachment B of this permit and with 40 CFR §144.55 and §146.7.
 2. Injection Commencement. The permittee shall not commence injection in a well under this permit until all corrective action has been taken in accordance with the plan contained in Attachment B of this permit, and in accordance with 40 CFR §144.55.
-

J. CORRECTIVE ACTION UNDER §3004 (u) OF THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Continuing Releases at Permitted Facilities:

The permittee shall institute corrective action as necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit, regardless of the time at which waste was placed in the unit. The schedules for compliance for completing such corrective action are contained in Attachment F.

PART II

WELL SPECIFIC CONDITIONS FOR UIC PERMITS

A. CONSTRUCTION

1. Siting [§146.12 (a)].

The injection well shall inject only into a formation which is beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water.

2. Casing and Cementing [§146.12(b)].

Notwithstanding any other provisions of this permit, the permittee shall maintain casing and cement in the well in such a manner as to prevent the movement of fluids into or between underground sources of drinking water for the expected life of the well. The casing and cement used in the construction of the well are shown in Attachment C of this permit. Any change shall be submitted by the applicant for the approval of the Director before installation.

3. Tubing and Packer Specifications [§146.12(c)].

Injection shall only take place through tubing with a packer set within the casing at the bottom of the long string casing immediately above the injection zone. Tubing and packer shall be designed for the expected service. The tubing and packer currently used in the well are represented in engineering drawings contained in Attachment C of this permit. Any changes shall be submitted by the applicant for the approval of the Director before installation.

4. Wellhead Specifications [§144.51(i)(4)].

A quarter-inch (1/4") female coupling and needle valve shall be

-20-

installed on the wellhead, to be used for independent injection pressure readings.

B. FORMATION DATA [§144.52(b)(1)]

If the limit of the injection pressure as specified in Permit Condition Part II C 2 is reached, or at the time of any well rework, the applicant shall conduct formation testing to provide the following information:

1. The permeability capacity (transmissibility) of the injection zone;
2. The formation or reservoir pressure; and
3. The skin effect.

The results of formation testing shall be submitted to the USEPA with the next monthly report.

C. OPERATIONS

1. Injection Formation. Injection shall be limited to the Munising Formation in the subsurface interval between 3,887 feet and 4,258 feet, measured from ground level.
2. Injection Pressure Limitation [§146.13(a)(1)].

Except during stimulation, injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone.

In no case, shall injection pressure initiate fractures in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water. The injection pressure and injected fluid shall be limited and monitored as specified in Attachment E.

3. Additional Injection Limitation [§146.13(a)(2)].

Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

4. Annulus Fluid and Pressure [§146.13(a)(3)].

The annulus between the tubing and the long string casing shall be filled with a fluid approved by the Director. The fluid currently maintained in the annulus is diesel oil. Any change in the annulus fluid shall be submitted by the applicant for the approval of the Director before replacement. The pressure on the annulus shall be higher than the injection pressure throughout the entire length of the tubing, at all times.

5. Automatic Warning and Shut-Off System. [§146.13 (b)(2)].

Within one (1) year of the effective date of this permit, the permittee shall install, continuously operate and maintain an automatic warning and shut-off system to stop injection in the following situations:

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- (a) Significant pressure change in the annulus;
- (b) Injection pressure reaches 1412 psig;
- (c) Significant change in the injection/annulus pressure differential.

Plans and specifications for the warning and shut-off system shall be submitted to the Director for approval prior to installation.

D. MONITORING

1. Monitoring Requirements [§144.51 (j)(1); §144.52(a)(5)].

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the fluid to be analyzed shall be one described in Appendix I of 40 CFR Part 261 or an equivalent method. The sampling location shall be at the injection line after the injection pump. The permittee shall identify the types of the tests and methods used to generate the monitoring data in the Waste Analysis Plan required in Permit Condition Part II D 3 below. The monitoring program shall conform to the one described in Attachment E on pages 48 and 49, of this permit and with the approved Waste Analysis Plan.

2. Injection Fluid Analysis [§146.13(b)(1); §144.52(a)(5)].

Monitoring of the nature of injected fluids shall comply with applicable analytical methods cited and described in Table I of 40 CFR §136.3 or in Appendix III of 40 CFR Part 261 or in certain circumstances by other methods that have been approved by the Director. Until the Waste Analysis Plan required in Permit Condition Part II, D 3 has been approved, injection fluids shall be analyzed monthly for the

parameters specified in Attachment E on page 48. An initial analysis of the injection fluid is contained in Attachment E on pages 46 and 47.

3. Waste Analysis Plan [§144.52 (a)(5); §264.13 (b)].

The permittee shall develop and follow a written Waste Analysis Plan which describes the procedures which will be carried out to comply with Permit Conditions Part II D 1 and D 2 above. This plan shall be submitted to the Director for approval within forty-five (45) working days of the receipt of this permit and a copy of the plan shall be kept at the facility. At a minimum, the plan must specify:

- (a) The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters;
- (b) The test methods which will be used to test for these parameters; and
- (c) The sampling method which will be used to obtain a representative sample of the waste to be analyzed and the frequency of sampling and analysis for each parameter.

4. Continuous Monitoring Devices [§146.13(b)(2)].

Continuous monitoring devices shall be installed and used to monitor injection pressure, flow rate and volume, and the pressure on the annulus between the tubing and the long string of casing. The monitoring results shall be submitted to the Director as specified in Permit Condition Part II E below and in Attachment E.

5. Monitoring Wells [§146.13].

The permittee shall submit a ground water monitoring plan to detect any migration of fluids into and pressure build-up in the underground sources of drinking water, including the parameters to be measured and the frequency of monitoring, no later than forty-five (45) working days after the effective date of this permit. The elements of an acceptable ground water monitoring plan are set forth in Attachment E of this permit. The time for submission of this plan may be extended for good cause if the Director receives a request before the expiration of the forty-five (45) day period and said request demonstrates the need for an extension. The permittee may request waiver of this requirement within forty-five (45) working days of the effective date of this permit if he can demonstrate that there is no potential for fluid movement above the confining zone caused by injection activity or that underground sources of drinking water are completely absent within the area of review. Upon approval of the ground water monitoring plan, or waiver of the ground water monitoring requirement, the plan or waiver shall be incorporated into this permit. All extensions or waivers granted must be in writing.

E. REPORTING REQUIREMENTS [§146.13(c)]

The permittee shall submit all required reports to the Director at:

United States Environmental Protection Agency
Region V
230 South Dearborn Street, 5WD
Chicago, Illinois 60604
ATTN: UIC Section

1. Monthly Reports.

The permittee shall submit monthly reports of the following information:

(a) Results of the injection fluid analyses specified in Permit Condition Part II D 2.

(b) Daily and monthly average values for injection pressure, flow rate and volume, and annular pressure.

(c) Daily maximum and minimum values for injection pressure with the corresponding values for flow rate and volume, and annular pressure.

(d) Daily maximum and minimum values for flow rate and volume with the corresponding values for injection pressure and annular pressure.

(e) Daily maximum and minimum values for annular pressure with the corresponding values for injection pressure and flow rate and volume.

(f) A graph containing values for annular pressure, injection pressure, and flow rate and volume recorded at six (6) hour intervals. This information is to be displayed on a single graph, with annular pressure, injection pressure, and flow rate and volume described in individual contrasting colors.

2. Quarterly Reports.

If monitoring wells are installed, results of monitoring as specified in Permit Condition Part II D 5 shall be submitted on a quarterly basis.

3. Reports on Well Tests and Workovers [§146.13 (c)(2)].

In the first quarterly report after the activity, the permittee shall report to the Director the results of the following:

- (a) Demonstrations of mechanical integrity;
- (b) Other tests required by this permit;
- (c) Any well workover.

F. CLASS I HAZARDOUS WASTE MANIFEST

Permittees injecting hazardous wastes which are accompanied by a manifest or delivery document shall comply with the requirements of 40 CFR §144.14.

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PART III
ATTACHMENTS

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ATTACHMENT A
PLUGGING AND ABANDONMENT PLAN

<u>CONTENTS</u>	<u>PAGE</u>
Description of Plugging and Abandonment Procedure	29
Plugging and Abandonment Plan	30

CLOSURE PLAN

PLUG AND ABANDONMENT PROCEDURE FOR ALL PROPOSED WASTE DISPOSAL WELLS

1. Move in and rig up.
2. Pump 100 bbls of 10 lb/gal. brine.
3. Dismantle wellhead and mount blowout preventor.
4. Remove the 2 3/8" OD injection tubing. If packer will not unseat, cut the tubing with a tubing charge immediately above the packer. Remove and decontaminate the tubing as required.
5. Set bridge plug in the long string casing.
6. Place cement from the top of the bridge plug to 3790'±.
7. Wait on cement four hours.
8. Balance Class "H" in two stages from 3834'± to surface.
9. Rig down and move out.
10. Wait on cement eight hours.
11. Cut off wellhead and casing 3' below ground level and weld steel plate on top of casing. Steel plate should be inscribed with Serial No. and date of plugging. Federal and State representatives will witness the plugging and will sign the plug and abandonment form.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

PLUGGING AND ABANDONMENT PLAN

NAME AND ADDRESS OF FACILITY
Rouge Manufacturing Complex
3001 Miller Road, Rm 2307
Dearborn, Michigan 48121

NAME AND ADDRESS OF OWNER/OPERATOR
Rouge Steel Company
3001 Miller Road
Dearborn, Michigan 48121

STATE
MI

COUNTY
Wayne

PERMIT NUMBER
MI-163-1W-0002

LOCATE WELL AND OUTLINE UNIT ON
SECTION PLAT — 640 ACRES

SURFACE LOCATION DESCRIPTION

SE 1/4 OF NW 1/4 OF NW 1/4 SECTION 28 TOWNSHIP 2S RANGE 11E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface 855.9
Location _____ ft from (N/S) N Line of quarter section
and 1076.4 ft from (E/W) W Line of quarter section

TYPE OF AUTHORIZATION

- ☐ Individual Permit
☐ Area Permit
☒ Rul.

Number of Wells 2

WELL ACTIVITY

- ☒ CLASS I
☐ CLASS II
☐ Brine Disposal
☐ Enhanced Recovery
☐ Hydrocarbon Storage
☐ CLASS III

Lease Name Wildcat

Well Number 2

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT/LB/FT	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
20"		10'	10'	24"
1 7/8"	48	137'	137'	17 1/2"
1 1/2"	32.3	664'	664'	12 1/4"
5 1/2"	15.5	4307'	4307'	

METHOD OF EMPLACEMENT OF CEMENT PLUGS

- ☒ The Balance Method
☐ The Dump Bailer Method
☐ The Two-Plug Method
☐ Other

CEMENTING TO PLUG AND ABANDON DATA

	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)	4.95"	4.95"					
Depth to Bottom of Tubing or Drill Pipe (ft)	4307' ±	3790' ±					
Sacks of Cement To Be Used (each plug)	65	477					
Slurry Volume To Be Pumped (cu ft)	69	506					
Calculated Top of Plug (ft)	3790'	3'					
Measured Top of Plug (if tagged ft)	N/A	N/A					
Slurry Wt (lb/Gal)	16.4	16.4					
Type Cement or Other Material (Class III)	Class H	Class H					

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)

From	To	From	To
Perforations 3806'	3906'		
3016'	3926'		
3936'	3946'		
3978'	4012'		
4030'	4050'		

Estimated Cost to Plug Wells

\$40,000 - \$45,000

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE (Please type or print)
Paul T. Sullivan, President
Rouge Steel Company

SIGNATURE

Paul T. Sullivan

DATE SIGNED

February 21, 1985

ATTACHMENT B
CORRECTIVE ACTION PLAN

CORRECTIVE ACTION PLAN

No improperly sealed, completed or abandoned wells were found within the area of review. In the unlikely event that some unforeseen well failure which might jeopardize the underground sources of drinking water were to occur during injection operations the following corrective action plan should be followed:

1. Immediately halt injection into all disposal wells in the area.
2. Notify U.S.E.P.A. and Michigan DNR personnel of the well failure.
(Telephone notification to occur within (24) twenty-four hours of discovery of the problem, and written confirmation to be transmitted by letter within (5) five days).
3. Conduct an investigation of the well failure and develop a plan of corrective action to eliminate the problem.
4. Perform the necessary remedial work.

ATTACHMENT C
CONSTRUCTION DETAILS

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Description of Well Construction	34 - 35
Well Schematic	36

WELL CONSTRUCTION

WELL DESIGN

In general, the injection well has four concentric "strings" of steel casing plus injection tubing. Conductor casing was set to a depth of 10'. Casing was set to a depth of 137'± to prevent soil collapse while drilling to surface casing depth. Intermediate casing was set and cemented below the injection zone for waste disposal well No. 1 and to the top of the Bass Island Group (664'±). The long string casing or protection string is set into the Mt. Simon Formation (4308'±) and extends to the surface. It maintains well integrity and provides a protective casing through fresh water zones. The long string casing is also cemented to the surface providing additional isolation of fresh groundwater. To eliminate corrosion of the protective casing, wastewater is pumped down injection tubing. The tubing is separated from the long string casing by a fluid - filled annulus. Waste fluids cannot move up this annulus due to a mechanical sealing "packer" set above the injection zone.

Conductor Casing - Conductor casing was driven to 10'±.

Approximately 10'± of 20" O.D. carbon steel casing was installed. The conductor casing serves as a support foundation for other surface equipment necessary during drilling operations.

WELL CONSTRUCTION (Continued)WELL DESIGN (Continued)

Surface Casing - Surface casing is set to the base of the Dundee Formation Group. It protects the surface aquifers and provides protection from wastewater contamination. 13 3/8" O.D. carbon steel casing was set to a depth of 137'± and cemented to the surface.

Intermediate Casing - Intermediate casing was set to the top of the Bass Island Group. It seals off the injection zone of Ford Waste Disposal Well No. 1. 9 5/8" O.D. carbon steel casing was set to a depth of 664'± and cemented to the surface.

Long String Casing - The long string or protection casing was set into the Mt. Simon injection zone and cemented to the surface. Approximately 4307'± of 5/2" O.D. Carbon steel casing was required. Since the long string casing provides the primary protection against vertical migration of waste fluids, precautions were taken. The precautions included multiple stage cementing, increased hole size, centralized casing and proper cement density.

Injection Tubing - A total of 3864'± of 2 3/8" O.D. 4.60# EUE injection tubing was required. It was set into a packer at 3834'±. The packer seals the annular space between the long string casing and injection tubing. The annular space is pressurized and monitored as required to detect leaks or mechanical failures.

Disposal Well #2 - Project 12051

Elevations taken from Kelly Ditching Co. (drill floor) to coincide with elevations on all geophysical logs

Injection of Buffer-City Water

Volume: 1,000,000 Gallons
 Rate: 1 barrel/42 Gallons per Minute
 Time: 17 Days
 Initial Pump Pressure: 250 # (anticipated)

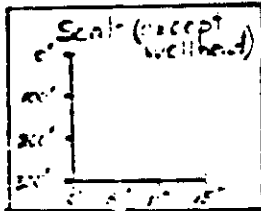
12" casing to 10'
 20" casing to 137'
 15 1/2" casing to 137'
 9 1/2" casing to 664'
 24" hole to 10'
 17 1/2" hole to 147'
 12 1/2" hole to 664'

All casing (except 20") cemented to surface

Annulus is filled to surface with #2 oil

Baker "R" Pack set at 3,634'

2 3/4" tubing to 3,865'



3,896'
 Eleven Refractors
 3,906'

3,916'
 Eleven Refractors
 3,926'

3,936'
 Eleven Refractors
 3,946'

3,956'

Thirty-three Refractors

4,002'

4,026'

Twenty-two Refractors

4,050'

Baker "R" Pack set at 3,634'

2 3/4" tubing to 3,865'

DISPOSAL ZONE
 3,896' to 4,050'

Calculated*
 Radius of

Aug Est	Aug Est	Injected Fluid
1127	2642	32'

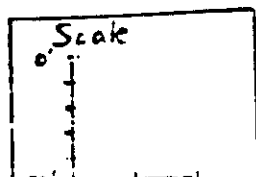
1527	1911	62'
------	------	-----

1677	1185	49'
------	------	-----

* (effect of fractures included in calculation)

1677	413	23'
------	-----	-----

1557	352	27'
------	-----	-----



ATTACHMENT D
FINANCIAL ASSURANCE MECHANISM

<u>CONTENTS</u>	<u>PAGE</u>
Schedule for Periodic Updating of Corporate Guarantee	38
Chief Financial Officer's Letter	39 - 44
Accountants' Opinions	45 - 46

SCHEDULE FOR PERIODIC UPDATING OF CORPORATE GUARANTEE FOR PLUGGING AND
ABANDONMENT [§144.63 (f)(5)]

Within ninety (90) days after the close of each fiscal year, the permittee shall submit updated financial assurance information to support the corporate guarantee for plugging and abandonment provided in this permit. The information submitted to the Director must consist of the following three items, as specified in paragraph (f)(3) of 40 CFR §144.63 (Subpart F):

(i) A letter signed by the owner's or operator's chief financial officer and worded as specified in §144.70(f); and

(ii) A copy of the independent certified public accountant's report on examination of the owner's or operator's financial statements for the latest completed fiscal year; and

(iii) A special report from the owner's or operator's independent certified public accountant to the owner or operator stating that:

(A) He has compared the data which the letter from the chief financial officer specifies as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and

(B) In connection with that procedure, no matters came to his attention which caused him to believe that the specified data should be adjusted.



Ford Motor Company

The American Road
P.O. Box 1899
Dearborn, Michigan 48121
November 2, 1984

Regional Administrator
U.S. Environmental Protection Agency
Region V
230 South Dearborn St.
Chicago, IL 60604

Subject: Underground Injection Financial Requirements
Rouge Steel Company

I am the chief financial officer of

Ford Motor Company
The American Road
Dearborn, Michigan 48121

This letter is in support of this firm's use of the financial test to demonstrate financial assurance, as specified in Subpart F of 40 CFR Part 144.

1. This firm is the owner or operator of the following injection wells for which financial assurance for plugging and abandonment is demonstrated through the financial test specified in Subpart F of 40 CFR Part 144. The current plugging and abandonment cost estimate covered by the test is shown for each injection well.

NONE.

2. This firm guarantees, through the corporate guarantee specified in Subpart F of 40 CFR Part 144, the plugging and abandonment of the following injection wells owned or operated by subsidiaries of this firm. The current cost estimate for plugging and abandonment so guaranteed is shown for each injection well.

EPA ID No.: not yet assigned.

Rouge Steel Company

3001 Miller Road

Dearborn, MI 48121

Acid Waste Disposal Well No. 3

\$45,000

Lat 42° 18' 05" Long: 83° 09' 55"

TWP 25, 11E Section 20 SW 1/4 section

2600 ft. from west line

100 ft. from south line

3. In States where EPA is not administering the financial requirements of Subpart F of 40 CFR 144, this firm as owner or operator or guarantor, is demonstrating financial assurance for the plugging and abandonment of the following injection wells through the use of a test equivalent or substantially equivalent to the financial test specified in Subpart F of 40 CFR 144. The current plugging and abandonment cost estimate covered by such a test is shown for each injection well.

NONE.

4. This firm is the owner or operator of the following injection wells for which financial assurance for plugging and abandonment is not demonstrated either to EPA or a State through the financial test or any other financial assurance mechanism specified in Subpart F of 40 CFR 144 or equivalent or substantially equivalent State mechanisms. The current plugging and abandonment cost estimate not covered by such financial assurance is shown for each injection well.

NONE.

This firm is required to file a Form 10K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this firm ends on December 31. The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statements for the latest completed fiscal year, ended December 31, 1983.

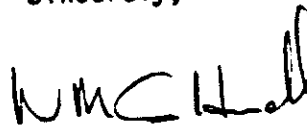
Alternative II

- | | | |
|--------|--|---|
| 1. (a) | Current plugging and abandonment cost | \$ 45,000 |
| (b) | Sum of the Company's financial responsibilities under 40 CFR 264 and 265, Subpart H, currently met using the financial test or corporate guarantee | \$10,070,355 |
| (c) | Total of lines (a) and (b) | \$10,115,355 |
| 2. | Current bond rating of most recent issuance of this firm and name of rating service | Not rated-private placement (Ford's Senior long-term debt is rated A- by Standard + Poor's and A3 by Moody's) |
| 3. | Date of issuance of bond | October 1, 1984 |
| 4. | Date of maturity of bond | October 1, 1999 |

- | | | |
|---|------------------|-----------|
| * 5. Tangible net worth | \$7,259 million | |
| * 6. Total assets in the U.S. | \$13,229 million | |
| | <u>Yes</u> | <u>No</u> |
| 7. Is line 5 at least \$10 million? | X | |
| 8. Is line 5 at least 6 times line 1 (c)? | X | |
| 9. Are at least 90% of the firm's assets located in the U.S.? If not, complete line 10. | | X |
| 10. Is line 6 at least 6 times line 1 (c)? | X | |

I hereby certify that the wording of this letter is identical to the wording specified in 40 CFR 144.70 (f) as such regulations were constituted on the date shown immediately below.

Sincerely,



W. M. Caldwell
Executive Vice President
and Chief Financial Officer
November 2, 1984

GUARANTEE FOR PLUGGING AND ABANDONMENT

Guarantee made this second day of November 1984, by Ford Motor Company, a business corporation organized under the laws of the State of Delaware, herein referred to as guarantor, to the United States Environmental Protection Agency (EPA), obligee, on behalf of our subsidiary: Rouge Steel Company, 3001 Miller Rd., Dearborn, MI 48121.

Recitals

1. Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in 40 CFR 144.63(e).

2. Rouge Steel Company owns or operates the following Class I hazardous waste injection well covered by this guarantee:

Acid Disposal Well No. 3	Lat. 42°18'05"
3001 Miller Road	Long. 83°09'55"
Dearborn, MI 48121	

3. "Plugging and abandonment plan" as used below refers to the plans maintained as required by 40 CFR Part 144 for the plugging and abandonment of injection wells as identified above.

4. For value received from Rouge Steel Company, guarantor guarantees to EPA that in the event that Rouge Steel Company fails to perform ("plugging and abandonment") of the above facility in accordance with the plugging and abandonment plan and other requirements when required to do so, the guarantor will do so or fund a trust fund as specified in 40 CFR 144.63 in the name of Rouge Steel Company in the amount of adjusted plugging and abandonment cost estimates prepared as specified in 40 CFR 144.62.

5. Guarantor agrees that, if at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor will send within 90 days, by certified mail,

Guarantee for Plugging and Abandonment

notice to the EPA Region in which the facility is located and to Rouge Steel that he intends to provide alternate financial assurance as specified in 40 CFR 144.63 in the name of Rouge Steel Company. Within 30 days after sending such notice, the guarantor will establish such financial assurance if Rouge Steel Company has not done so.

6. The guarantor agrees to notify the Regional Administrator, by certified mail, of a voluntary or involuntary case under Title 11, U.S. Code, naming guarantor as debtor, within 10 days after its commencement.

7. Guarantor agrees that within 30 days after being notified by an EPA Regional Administrator of a determination that guarantor no longer meets the financial test criteria or that he is disallowed from continuing as a guarantor of plugging and abandonment, he will establish alternate financial assurance, as specified in 40 CFR 144.63, in the name of Rouge Steel Company if Rouge Steel Company has not done so.

8. Guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the plugging and abandonment plan, the extension or reduction of the time of performance of plugging and abandonment or any other modification or alteration of an obligation of Rouge Steel Company pursuant to 40 CFR Part 144.

9. Guarantor agrees to remain bound under this guarantee for so long as Rouge Steel Company must comply with the applicable financial assurance requirements of 40 CFR Part 144 for the above-listed facilities, except that guarantor may cancel this guarantee by sending notice by certified mail, to the EPA Regional Administrator for the Region in which the facility is located and to Rouge Steel Company, such cancellation to become effective no earlier than 120 days after actual receipt of such notice by both EPA and Rouge Steel Company as evidenced by the return receipts.

10. Guarantor agrees that if Rouge Steel Company fails to provide alternate financial assurance and obtain written approval of such assurance from the the EPA Regional Administrator within 90 days after a notice of

Guarantee for Plugging and Abandonment

cancellation by the guarantor is received by both the EPA Regional Administrator and Rouge Steel Company, guarantor will provide alternate financial assurance as specified in 40 CFR 144.63 in the name of Rouge Steel Company.

11. Guarantor expressly waives notice of acceptance of this guarantee by the EPA or by Rouge Steel Company. Guarantor also expressly waives notice of amendments or modifications of the plugging and abandonment plan.

I hereby certify that the wording of this guarantee is identical to the wording specified in 40 CFR 144.70(f).

Effective date: November 2, 1984



W. M. Caldwell
Executive Vice President
and Chief Financial Officer
Ford Motor Company

Signature of witness or notary:



Coopers
& Lybrand

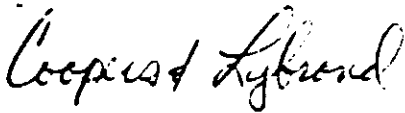
certified public accountants

Ford Motor Company
Dearborn, Michigan

We have examined the consolidated financial statements of Ford Motor Company and Consolidated Subsidiaries for the year ended December 31, 1983, and have issued our report thereon dated February 10, 1984. Our examination was made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

Mr. W. M. Caldwell, Ford Motor Company Executive Vice President and Chief Financial Officer, stated in a letter dated November 2, 1984 to the United States Environmental Protection Agency Regional Administrator (Region V), that tangible net worth and total assets in the United States at December 31, 1983 aggregated \$7,259 million and \$13,229 million, respectively, and that such assets in the United States were less than 90 percent of total assets. We have compared this data with corresponding data which we have derived from the financial statements referred to above.

In connection with the aforementioned procedure, no matters came to our attention which caused us to believe that the data specified above should be adjusted.



Coopers & Lybrand
400 Renaissance Center
Detroit, Michigan 48243
November 2, 1984

the Board of Directors and Stockholders
of Ford Motor Company

We have examined the consolidated balance sheet of Ford Motor Company and Consolidated Subsidiaries as of December 31, 1983 and 1982, and the related consolidated statements of income, stockholders' equity and changes in financial position for each of the three years in the period ended December 31, 1983. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the financial statements referred to above present fairly the consolidated financial position of Ford Motor Company and Consolidated Subsidiaries at December 31, 1983 and 1982, and the consolidated results of operations and changes in financial position for each of the three years in the period ended December 31, 1983, in conformity with generally accepted accounting principles

consistently applied during the period except for the change, with which we concur, in the method of accounting for foreign-currency translation, as described in Note 1 of Notes to Financial Statements.

Coopers & Lybrand

Coopers & Lybrand
400 Renaissance Center
Detroit, Michigan 48243
(313) 446-7100
February 10, 1984

Supplementary Disclosures

Worldwide Sales and Operating Income by Line of Business (Dollar amounts in millions)

	1983		1982		1981	
	Amount	Percent	Amount	Percent	Amount	Percent
Sales						
Automotive	\$40,971	92%	\$33,683	91%	\$34,573	91%
All Other	3,484	8	3,384	9	3,574	9
Total	\$44,455	100%	\$37,067	100%	\$38,247	100%
Operating Income (Loss)						
Automotive	\$ 1,833	102%	\$ (361)	(75)%	\$(1,246)	(99)%
All Other	(29)	(2)	(123)	(25)	(10)	(1)
Total	\$ 1,804	100%	\$ (484)	(100)%	\$(1,256)	(100)%

ATTACHMENT E
OPERATING, MONITORING AND REPORTING

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Waste Analyses	50 - 51
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OPERATING, MONITORING AND REPORTING REQUIREMENTS

<u>CHARACTERISTIC</u>	<u>LIMITATION</u>	<u>MINIMUM MONITORING REQUIREMENTS</u>	<u>MINIMUM REPORTING REQUIREMENTS</u>
	<u>Maximum</u>	<u>Frequency</u>	
*Injection Pressure for each well	1412 psig	continuous	monthly
Annulus Pressure for each well		continuous	monthly
Flow Rate		continuous	monthly
Cumulative Volume		continuous	monthly
Specific Gravity		monthly	monthly
Chemical Composition of Injected Fluid		monthly	monthly

* $[\cdot 8 - (\cdot 433)S_g]]D = \text{Pressure}$

- $[\cdot 8 - (\cdot 433)(1.00)]3877 = 1426.5 \text{ psia} - 14.3 = 1412.2 \text{ psig}$

The following parameters will be analyzed monthly:

- 1) pH
- 2) Specific gravity
- 3) Benzene
- 4) Phenols
- 5) Total suspended solids
- 6) Naphthalene
- 7) Cyanide
- 8) Chlorine
- 9) Sulfur



HYDRO RESEARCH SERVICES
Water Management Division
Clow Corporation

408 Auburn Avenue
Pontiac, MI 48058

313 334-1630
313 334-4747

April 10, 1985

Ford Motor Company
Rouge Manufacturing
3001 Miller Road
Dearborn, MI 48212
Attn: Tom Weber

NP - 50539 Rel - 94-723566

Sample Received: 2/22/85

Hydro Number:

Client I.D.:

88943

No: 2
Coke Oven

Total Solids, TS, %	<0.1
Total Volatile Solids, TVS, 600 °C, mg/l	300
Total Cyanide, CN, mg/l	93
Oxidizable Cyanide, CN, mg/l	91
Unoxidizable Cyanide, CN, mg/l	2
Phenol, mg/l	220
Nitrogen Ammonia, NH ₃ /N	59
pH	7.1
Chlorine Demand, Cl, mg/l	400
Sulfate, SO ₄ , mg/l	39
Total Alkalinity as CaCO ₃ , mg/l	290
Total Hardness as CaCO ₃ , mg/l	36
Bicarbonate Alkalinity as CaCO ₃ , mg/l	290
Carbonate Alkalinity as CaCO ₃ , mg/l	<2
Iron Dissolved, Fe, mg/l	<0.06
Iron, Fe, mg/l	<0.06
Oil & Grease, mg/l	17
B.O.D. ₅ , mg/l	360

CLOW**HYDRO RESEARCH SERVICES**
Water Management Division
Clow Corporation408 Auburn Avenue
Pontiac, MI 48058313 334-1630
313 334-4747

April 10, 1985

continued

Ford Motor Company
Rouge Manufacturing
3001 Miller Road
Dearborn, MI 48212
Attn: Tom Weber

NP - 50539 Rel - 94-723566

Sample Received: 2/22/85

Hydro Number:

Client I.D.:

88943

No: 2
Coke OvenCalcium, Ca, mg/l
Naphthalene (Crystalline), mg/l
Naphthalene, dissolved, mg/l
Total Sulfur, S, mg/l
Organic Sulfur, mg/l
Ammonium Sulfide, mg/l
Polysulfide, mg/l
Total Sulfides

11.0

0.8

2.7

320

Procedure not available

Procedure not available

Procedure not available

7.0

William F. Smith
Laboratory Supervisor

GROUND WATER MONITORING PLAN

The permittee shall submit in accordance with §146.13 (b)(4), a plan for monitoring the ground water quality and formation fluid pressure of the first permeable zone immediately overlying the confining layer above the injection zone. This plan must be submitted to the Director for approval no later than 45 days from the effective date of this permit. A schedule of implementation must be included.

The plan must include the following:

- A. A comprehensive report describing the local hydrogeologic framework in which the injection well operates. The report should include:
 1. An interpretation of formation-specific geologic information relating to; a) the adequacy of the confining layer or system, b) the locations and physical characteristics of overlying permeable zones including all USDWs, and c) an evaluation of faulting, fracturing and jointing;
 2. Identification of the proposed monitoring zone and a complete description of methods which will be used to determine aquifer parameters such as permeability, transmissivity and storage coefficient;
 3. An evaluation of the vulnerability to contamination of the lowest USDW; and,
 4. Based on new data developed in items 1 and 2 above, modify or compute the zone of endangering influence as per 40 CFR §146.6.

Specific information should be based on historical and current operating records, research of available geologic literature and/or logs from nearby wells. An evaluation should be made of the reliability of the above information and any data gaps identified. Where adequate information does not exist, it must be supplied by actual measurements.

B. Based on the above information, a monitoring well design and operating plan showing:

1. The number and location of wells designed to: a) detect any leakage of injected fluids above the confining zone; and b) monitor pressure changes by continuous water level recording. A minimum of three (3) wells will be required to define direction of flow; wells should be located as close as physically possible to the injection well.
2. Well specifications, including:
 - a) drilling and development methods
 - b) construction details
 - c) quality assurance plan
 - d) safety plan
 - e) proposed mechanical integrity determination
 - f) step drawdown test to determine well efficiency
 - g) television survey if drilling mud is used
3. A sampling plan, including;
 - a) proposed data to be collected during drilling
 - b) proposed monitoring parameters, including background formation fluid parameters, waste indicator "fingerprint" parameters, and pressure

- c) sample collection procedures
 - d) preservation and shipment
 - e) analytical procedures
 - f) chain of custody control
4. Reporting proposal, including;
- a) initial background survey
 - b) quarterly submittal of required data
 - c) annual interpretive summary report

Waiver Demonstration

An exemption from ground water monitoring requirements may be granted if the applicant can conclusively demonstrate that there is no potential for fluid movement above the confining zone caused by the injection activity, or that USDW's are completely absent within the area of review. Examples of acceptable exemption criteria include:

- ° The demonstrated absence of complex geologic structures such as faults; and
- ° A sufficiently thick confining formation (e.g. 500 feet of clay or shale).
- ° The potentiometric surface of the injection zone will not exceed the bottom of the lowest USDW.

Where the above criteria cannot be adequately demonstrated, direct measurement of vertical permeability of the confining system may be required.

ATTACHMENT F
CONTINUING RELEASES/CORRECTIVE ACTION PLAN

CONTINUING RELEASES/CORRECTIVE ACTION

A. Background

The Hazardous and Solid Waste Amendments (HSWA) of 1984 contain a requirement for corrective action of continuing releases. This provision is established in the new Section 3004(u) of the Act (Section 206 of HSWA). Section 3004(u) requires treatment, storage and disposal (TSD) facilities seeking RCRA permits to take corrective actions for all releases of hazardous waste or constituents from any solid waste management unit (SWMU) regardless of when the waste was placed in the SWMU. In order to fully appreciate the implications of the statutory requirements, the following definitions are made:

- (1) Facility - All contiguous land, structures and other appurtenances and improvements on the land used for treating, storing or disposing of hazardous waste. It includes the entire site that is under the control of the owner or operator engaged in hazardous waste management.
- (2) Corrective Action - As described in 40 CFR §264.100
- (3) Releases - Discussed in the preamble to the codification rule, includes any concentration of an Appendix VIII constituent in excess of ground water protection standards where such constituent has emanated from a SWMU. Releases to the air and surface waters are also included. Region V staff believes that releases should be defined at least as broadly as the term is defined in CERCLA
- (4) SWMU - Any contiguous land, structures, other appurtenances, and improvements on the land used for storage, treatment disposal, collection, source separation, transfer, processing,

SWMU - resource recovery or conservation of any solid waste (as defined in 40 CFR §261.2). It includes any unit at the facility from which hazardous constituents might migrate, irrespective of whether the units were intended for the management of solid and/or hazardous wastes.

B. Implementation of Corrective Action

The process of implementing Section 3004(u) will take place in three stages, with each stage consisting of several specific steps, as follows:

1. Preliminary Assessment. Assessment of continuing releases is required for all permits issued after November 8, 1984. If any of the requested information has been previously submitted to the Director, include the original source as a reference on the copy provided in the required report. The permittee is required to submit the following information to the Director within forty-five (45) days of the effective date of this permit. Failure to submit the required information or falsification of any submitted information is grounds for the termination of this permit (40 CFR §144.40). All information submitted must be certified as required by 40 CFR §144.32.
 - a. Topographic Maps - Provide map(s) showing the facility and a distance of 1,000 feet around the property line at a scale of one inch equal to not more than 200 feet. In addition to showing the location of the permitted hazardous waste facility and management units, the permittee must locate on the map each existing and former solid waste management unit (SWMU), regardless of its permitting status.
 - b. Description of Units - For each SWMU, provide a history of construction, including engineering drawings, foundations, materials of construction, dimensions, capacity and ancillary systems. Include location, design, construction, and description of all monitoring systems (air, surface water, ground water, etc.). If the SWMU is not in use, describe the methods utilized to close the facility and all construction related to closure.
 - c. Description of Operation - For each SWMU, provide a history of the unit's function and all of the wastes processed or

disposed of at the unit. Include the hazardous waste constituents processed or disposed of, the time frames of operation, and quantities handled during those time frames.

- d. Description of Releases - For each SWMU, describe any release or potential release originating at each SWMU. Include the suspected date of release, the type of hazardous waste or hazardous waste constituent, the quantity released, the environmental media affected, the nature of the release and present migration, and the circumstances and cause of the release. Provide any available data which would quantify the nature and extent of any environmental contamination including the results of air, soil, surface and ground water sampling and analysis. Provide any available data which would indicate that no releases are present, if applicable.

2. Remedial Investigations and Corrective Action Plan Development. If hazardous wastes or constituents have been released, no later than six (6) months after the effective date of this permit, the permittee shall conduct remedial investigations, develop a proposed corrective action plan, and submit a report on the investigations to the Director as follows:

- (a) Site investigation, including but not limited to, hydrological data, both surface and subsurface sampling, and identification of background prior to contamination;
- (b) Remedial investigations by owner/operator to identify/characterize releases;
- (c) Develop an appropriate proposed corrective action plan and cost estimate; and
- (d) Provide a financial assurance mechanism to cover the cost of implementing the corrective action plan.

3. Corrective Action Plan Implementation. Within thirty-six (36) months after the Director's approval, the permittee shall implement the corrective action plan as follows:

- (a) 6 months after approval - Complete engineering design;
- (b) 6 months after approval - Prepare contract documents and award construction bids or equivalent in-house action.
- (c) 18 months after approval - Complete corrective action plan

C. Permit Modification

The Director may modify this permit to include additional requirements or modify the Schedule of Compliance as appropriate in accordance with 40 CFR §270.41 and Section 212 of HSWA. If major permit modification is needed, USEPA will publish a public notice and allow for public review and comment.

PERMIT REVISIONS AND RESPONSE TO COMMENTS

UNDERGROUND INJECTION CONTROL

PERMIT # MI-163-1W-0002

PERMIT REVISIONS

The following provisions of draft permit # MI-163-1W-0002 have been changed in the final permit decision:

Authorization: Revised to reflect requirements under the Resource Conservation
Page and Recovery Act (RCRA) program.

Permit Part I

Section:

- A. Revised to state that the above ground facilities associated with the injection well must obtain authorization under Subtitle C, if required
- B.2. Section was revised for clarity.
- E.8.(a) Section was revised for consistency with rest of Section 8.
- E.8.(d) Section was revised to reflect limitations of the permit.
- E.9.(a) Section was revised for clarity.
- E.9.(b) Last sentence was moved to Section E.9.(d) for clarity.
- E.9.(c) Part not pertinent to this Section was deleted.
- E.9.(d) Section was revised for clarity.
- E.10. Section was revised for clarity.
- E.12.(a). Section was revised for clarity.
- E.12.(d) Section was revised for clarity.
- E.12.(g) Section was added to ensure that the permittee has reviewed and is familiar with the permit document.
- E.12.(h) Section was added to reflect requirements under the RCRA program.
- F.2.(b) Section was revised for clarity.
- F.4. Section was added for clarity.
- G.2.(draft) Section was not pertinent to existing wells and was deleted.
- G.2.(final) Section was revised for clarity. In addition, since mechanical integrity is demonstrated continuously by annulus monitoring,
G.3.(draft) the annual demonstration requirement was replaced with a biennial requirement.

Permit Part I, continued

Section:

- G.4.(final) Section was revised for clarity.
G.5.(draft)
- G.5.(final) Section was added, containing material from Section G.3.(draft).
- H.2. Draft Attachment D was deleted. Final Attachment D consists of material which was in Draft Attachment G.
- H.2.(a) Section was revised for clarity.
- H.2.(d) Section was inserted to cover revision of financial assurance costs.

Permit Part II

Section:

- A.1. Section was added for completeness.
- A.2.(final) Section was revised for clarity.
A.1.(draft)
- A.3.(final) Section was revised for clarity.
A.2.(draft)
- B.1.(draft) Section was removed. Information in this Section was already submitted as part of the permit application.
- B.1.(final) The timing of compliance with this Section was revised to coincide with times when the well is not in use, in addition to any time when the maximum allowable injection pressure is reached. The timing of submission of results in compliance with this Section was revised to coincide with monthly reporting. Also revised to add "any rework involving removal of tubing and packer."
- C.1. Section was revised for clarity.
- C.4. Section was revised for clarity. Annulus fluid need not be replaced as the fluid is considered inert
- C.5. Section was added to provide additional operating safety.
- D.1. Section was revised for clarity.
- D.2. Section was revised for clarity.
- D.5. Section was revised for clarity.
- E.1.(c)-(e) Requirements were revised to provide more representative data

Permit Part II, continued

Section:

- E.1.(f) Section was revised to provide more representative data on the injection operation.
- E.1.(g) Section was deleted.

Permit Part III

- Attachment D: Schedule for periodic updating of corporate guarantee for Plugging and Abandonment was added.
- Attachment E: Maximum injection pressure in psig was revised to correct error in draft permit.
- Attachment F:
- B.1. Deadline for submission of Preliminary Assessment of Continuing Releases was changed to reflect RCRA requirements.
- B.2.(d) Section was revised to provide for separate financial assurance for any corrective action under RCRA.

In addition to the general changes noted previously, the word 'days' was replaced by 'working days' throughout the permit in order to provide further clarity.

RESPONSE TO COMMENTS

Following is a response to significant comments received on draft permit MI-163-1W-0002:

Permit Part I

Section:

- Page 1 Comment: Change Eau Claire and Mt. Simon Sandstone to the Munising Fomation.
- Response: Section was revised as suggested by Rouge.
- E.9. Comment: Remove reference to plugging and abandonment plan.
- Response: Section was revised as suggested by Rouge.
- F.2. Comment: Allow changes in plugging and abandonment plan without permit amendment or public hearing.
- Response: Permit amendments and public hearings will not be required to make changes in the plugging and abandonment plan.
- G.2.(Final) Comment: Frequency of mechanical integrity test
G.2.(Draft) should be every five years instead of annually.
- Response: Section was revised to allow biennial mechanical integrity demonstrations.

Permit Part II

Section:

- A.2.(Final) Comments: Clarify language in first sentence and
(Draft) delete construction specifications from Attachment C.
- Response: Language was clarified and revised to allow permittee to change casing and cementing with prior permission.

A.3. (final)
A.2. (draft)

Comment: Delete sizes of packer and tubing. Delete the word "approved"

Response: The work "approved" was deleted. Changes in tubing and packer can be made with prior approval.

B. (final)
B.2. (draft)

Comment: Delete Attachment D. Eliminate permeability and skin effect from formation and skin effect from formation testing requirements.

Response: Attachment D was deleted. Formation testing requirements were retained in order to assess formation conditions.

C.1.

Comment: Change injection formation to Munising Formation. Insert work "approximate" before the word subsurface. Modify subsurface interval to correspond with injection zone.

Response: Injection formation was changed to Munising Formation. Subsurface interval changed to 3887 ft. - 4258 ft.

C.2.

Comment: Specify how injection pressure will be calculated.

Response: Calculation of injection pressure limitation is shown in Attachment E.

C.4.

Comment: A minimum pressure of 20psi should be maintained on annulus.

Response: Pressure on annulus shall be higher than injection pressure throughout the entire length of the tubing.

D.1.

Comment: Change sample location description and delete reference to illustration.

Response: Sample location description was changed; illustration was deleted.

E.1.

Comment: Delete requirement for strip charts.

Response: Strip charts will not be required to be submitted. Instead a graph summarizing monitoring information will be required.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

230 SOUTH DEARBORN ST.

CHICAGO, ILLINOIS 60604

REPLY TO THE ATTENTION OF:

U.S. ENVIRONMENTAL PROTECTION AGENCY

UNDERGROUND INJECTION CONTROL PERMIT: CLASS I

Permit Number MI-163-1W-0002

EPA ID Number MID087738431

Pursuant to the Underground Injection Control regulations of the U.S. Environmental Protection Agency codified at Title 40 of the Code of Federal Regulations, Parts 124, 144, 146, and 147, Rouge Steel Company, 3001 Miller Road, P.O. Box 1699, Dearborn, Michigan is hereby authorized to operate a Class I injection well located in Wayne County Michigan, T2S, R11E, Section 28, NW 1/4, into the Munising Formation upon the express condition that the permittee meet the restrictions set forth herein.

All references to Title 40 of the Code of Federal Regulations are to all regulations that are in effect on the date that this permit is effective. The following attachments are incorporated into this permit: A, B., C, D, E and F.

This permit shall become effective on October 30, 1985, and shall remain in full force and effect during the life of the permit, unless: 1) the statutory provisions of section 3004(f), (g) or (m) of the Resource Conservation and Recovery Act ban or otherwise condition the authorizations in this permit; 2) the Agency promulgates rules pursuant to these sections which withdraw or otherwise condition the authorization in this permit; or 3) this permit is otherwise revoked, terminated, modified or reissued pursuant to 40 CFR §144.39 or §144.40.

This permit and the authorization to inject shall expire at midnight, October 30, 1990, unless terminated.

Signed this *30th* day of *September*, 1985.

Charles H. Sutfin
Charles H. Sutfin
Director, Water Division

U.S. ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL PERMIT

CLASS I HAZARDOUS

PERMIT NUMBER MI-163-1W-0002

ROUGE STEEL COMPANY

DEARBORN, MICHIGAN

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PART I
GENERAL PERMIT COMPLIANCE

A. EFFECT OF PERMIT

The permittee is allowed to engage in underground injection in accordance with the conditions of this permit. Notwithstanding any other provisions of this permit, the permittee authorized by this permit shall not construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of injection, annulus or formation fluid into underground sources of drinking water. The objective of this permit is to prevent the introduction of contaminants into underground sources of drinking water if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR Part 142 or may otherwise adversely affect the health of persons. Any underground injection activity not specifically authorized in this permit is prohibited. Compliance with this permit during its term constitutes compliance, for purposes of enforcement, with Part C of the Safe Drinking Water Act (SDWA). Such compliance does not constitute a defense to any action brought under Section 1431 of the SDWA, or any other common or statutory law other than Part C of the SDWA. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local law or regulations. Nothing in this permit shall be construed to relieve the permittee of any duties under applicable regulations.

This permit does not relieve owners and operators of hazardous waste injection wells of their obligation to comply with any additional regulations or requirements under the Resource Conservation and Recovery Act (RCRA). This permit does not authorize any above ground generating, handling, storage, treatment or disposal facilities. Such activities must receive authorization under the regulations promulgated pursuant to Part C of the Resource Conservation and Recovery Act.

B. PERMIT ACTIONS

1. Modification, Revocation, Reissuance and Termination.

The Director may, for cause or upon request from the permittee, modify, revoke and reissue, or terminate this permit in accordance with 40 CFR §144.12, §144.39, and §144.40. Also, the permit is subject to minor modifications for cause as specified in 40 CFR §144.41. The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes, or anticipated noncompliance on the part of the permittee does not stay the applicability or enforceability of any permit condition.

2. Transfer of Permits. This is not transferable to any person except in accordance with 40 CFR §144.38.

C. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any

circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

D. CONFIDENTIALITY

In accordance with 40 CFR Part 2 and §144.5, any information submitted to the United States Environmental Protection Agency (USEPA) pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, USEPA may make the information available to the public without further notice. If a claim is asserted, the validity of the claim will be assessed in accordance with the procedures in 40 CFR Part 2 (Public Information). Claims of confidentiality for the following information will be denied:

1. The name and address of the permittee;
 2. Information which deals with the existence, absence or level of contaminants in drinking water.
-

E. DUTIES AND REQUIREMENTS

1. Duty to Comply. The permittee shall comply with all applicable Underground Injection Control (UIC) Program regulations and conditions of this permit, except to the extent and for the duration such noncompliance is authorized by an emergency permit issued in accordance with §144.34. Any permit noncompliance constitutes a violation of the SDWA and is grounds for enforcement action, permit termination, revocation and

reissuance, modification, or for denial of a permit renewal application. Such noncompliance may also be grounds for enforcement action under the RCRA.

2. Penalties for Violations of Permit Conditions. Any person who violates a permit requirement is subject to civil penalties, fines and other enforcement action under the SDWA and may be subject to such actions pursuant to the RCRA. Any person who willfully violates permit conditions may be subject to criminal prosecution.

3. Continuation of Expiring Permits.

(a) Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must submit a complete application for a new permit at least 180 days before this permit expires.

(b) Permit Extensions. The conditions of an expired permit may continue in force in accordance with 5 U.S.C. 558 (c) and 40 CFR §144.37.

(c) Effect. Permits continued under 5 U.S.C. 558 (c) and 40 CFR §144.37 remain fully effective and enforceable.

(d) Enforcement. When the permittee is not in compliance with the conditions of the expiring or expired permit the Director may choose to do any or all of the following:

- (1) Initiate enforcement action based upon the permit which has been continued;

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(2) Issue a notice of intent to deny the new permit. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operation without a permit;

(3) Issue a new permit under 40 CFR Part 124 with appropriate conditions; or

(4) Take other actions authorized by Underground Injection Control regulations.

(e) State Continuation. A USEPA-issued permit does not continue in force beyond its expiration date under Federal law if at that time a State has primary enforcement responsibility under the SDWA. A State authorized to administer the UIC program may continue either USEPA- or State-issued permits until the effective date of the new permits, if State law allows. Otherwise, the facility or activity is operating without a permit from the time of expiration of the old permit to the effective date of the State-issued new permit. Furthermore, if the State does not continue the USEPA permit upon obtaining primary enforcement responsibility, the permittee must obtain a new State permit or be authorized to inject by State rule or he will be injecting without authorization.

4. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for the permittee in an enforcement action, to claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

5. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

6. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this permit.

7. Duty to Provide Information. The permittee shall furnish to the Director, within a time specified, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

8. Inspection and Entry. The permittee shall allow the Director or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:

- (a) Enter, at reasonable times, upon the permittee's premises where a regulated facility or activity is located or conducted,

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or where records are kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that are kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any facilities, equipment or operations regulated or required under this permit.

9. Records.

(a) The permittee shall retain records and all monitoring information, including all calibration and maintenance records and all original chart recordings for continuous monitoring instrumentation and copies of all reports required by this permit for a period of at least five (5) years from the date of the sample, measurement or report, unless these materials are submitted to the Director as part of reporting requirements under this permit.

(b) The permittee shall maintain records of all data required to complete the permit application form for this permit and any supplemental information submitted under 40 CFR §144.27, §144.28,

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(c) The permittee shall retain records concerning the nature and composition of all injected fluids until three (3) years after the completion of plugging and abandonment.

(d) The retention period specified in Permit Condition E 9 (a) through (c) above may be extended by request of the Director at any time. The permittee shall continue to retain records after the retention period specified in Permit Condition E 9 (a) through (c) or any requested extension thereof expires unless he delivers the records to the Director or obtains written approval from the Director to discard the records.

(e) Records of monitoring information shall include:

- (1) The date, exact place, and time of sampling or measurements;
- (2) The individual(s) who performed the sampling or measurements;
- (3) A precise description of both sampling methodology and the handling of samples;
- (4) The date(s) analyses were performed;
- (5) The names of individual(s) who performed the analyses;
- (6) The analytical techniques or methods used; and
- (7) The results of such analyses.

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10. Monitoring. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. Monitoring results shall be reported at the intervals contained in Part II (E 1-3) and in Attachment E of this permit.

(a) Monitoring of the nature of injected fluids shall comply with applicable analytical methods cited and described in Table I of 40 CFR §136.3 or in Appendix III of 40 CFR Part 261 or in certain circumstances by other methods that have been approved by the Director.

(b) Sampling and analysis shall comply with the specifications of the Waste Analysis Plan required in Part II (D 3) of this permit.

11. Signatory Requirements. All reports or other information, required to be submitted by this permit or requested by the Director shall be signed and certified in accordance with 40 CFR §144.32.

12. Reporting Requirements.

(a) Planned Changes. The permittee shall give written notice to the Director as soon as possible, of any planned physical alterations or additions to the permitted facility, other than minor repair/replacement maintenance activities.

(b) Anticipated Noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

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(c) Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule to this permit shall be submitted no later than thirty (30) working days following each schedule date.

(d) Twenty-four Hour Reporting.

(1) The permittee shall report to the Director any permit noncompliance which may endanger health or the environment. Any information shall be provided orally within twenty-four (24) hours from the time the permittee becomes aware of the circumstances. Such reports shall include, but not be limited to the following information:

(i) Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water.

(ii) Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between underground sources of drinking water.

(2) A written submission shall also be provided within five (5) working days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to

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continue; and steps taken or planned to reduce, eliminate and prevent recurrence of the noncompliance.

(e) Other Noncompliance. The permittee shall report all other instances of noncompliance not otherwise reported at the time monitoring reports are submitted. The reports shall contain the information listed in Permit Condition E 12(d)(2) above.

(f) Other Information. When the permittee becomes aware that he failed to submit any relevant facts in the permit application or submitted incorrect information in a permit application or in any report to the Director, the permittee shall submit such facts or information within ten (10) working days.

(g) Report on Permit Review. Within thirty (30) working days of receipt of this permit, the permittee shall report to the Director that he has read and is personally familiar with all terms and conditions of this permit.

(h) Reporting Requirements Under the RCRA. The permittee shall also comply with applicable federal regulations under the Resource Conservation and Recovery Act. These include, but are not limited to, 40 CFR §264.117, §264.119, §264.120 and the General Facility Standards described in §264 Subpart B (§264.10 through §264.18).

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F. PLUGGING AND ABANDONMENT

1. Notice of Plugging and Abandonment. The permittee shall notify the Director no later than forty-five (45) working days before conversion or abandonment of the well.

2. Plugging and Abandonment. The permittee shall plug and abandon the well consistent with 40 CFR §146.10, as provided for in the plugging and abandonment plan contained in Attachment A of this permit. Within sixty (60) working days after plugging a well, or at the time of the next quarterly report (whichever is shorter), the permittee shall submit a report to the Director. The report shall be certified as accurate by the person who performed the plugging operation, and shall consist of either:

(a) A statement that the well was plugged in accordance with the plan previously submitted to the Director; or

(b) If the actual plugging differed from the approved plan, a statement defining the actual plugging and explaining why the Director should approve such deviation. Any deviation from a previously approved plan which may endanger underground sources of drinking water is cause for the Director to require the operator to replug the well.

3. Inactive Wells. After cessation of injection for two (2) years the permittee shall plug and abandon the well in accordance with the plan and 40 CFR §144.52 (a)(6) unless the permittee has:

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- (a) Provided notice to the Director; and
- (b) Described actions or procedures, which are deemed satisfactory by the Director, that the permittee will take to ensure that the well will not endanger underground sources of drinking water during the period of temporary abandonment. These actions and procedures shall include compliance with the technical requirements applicable to active injection wells unless waived, in writing, by the Director.

4. Revision of Plugging and Abandonment Plan. If the plugging and abandonment plan should change, a revised plan shall be submitted to the Director for approval at the time of the next monthly report. Once approved, the revised plugging and abandonment plan will replace the original plan as part of this permit.

G. MECHANICAL INTEGRITY

- 1. Standards. The injection well must have and maintain mechanical integrity consistent with 40 CFR §146.8.
- 2. Subsequent Mechanical Integrity Demonstrations. A demonstration of mechanical integrity in accordance with 40 CFR §146.8 shall be made biennially from the date of the last approved demonstration. Mechanical integrity shall also be demonstrated any time the tubing is removed from the well, the packer is reset, or loss of mechanical integrity becomes evident during operation. For workovers involving no modification

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to the cement or completed interval, mechanical integrity shall be demonstrated using a test outlined in 40 CFR §146.8 (b). The permittee shall notify the Director of his intent to demonstrate mechanical integrity at least thirty (30) working days prior to such demonstration. The permittee shall report the results of a mechanical integrity demonstration within ninety (90) working days after completion thereof.

3. Gauges. All gauges used in mechanical integrity demonstrations shall be calibrated according to the procedures of The National Bureau of Standards to an accuracy of not less than one-half percent (0.5%) of full scale, initially and annually thereafter. A copy of the calibration certificate shall be submitted to the Director or his representative at the time of demonstration.

4. Loss of Mechanical Integrity. If the permittee or the Director finds that the well fails to demonstrate mechanical integrity during a test, or a loss of mechanical integrity as defined by 40 CFR §146.8 becomes evident during operation, the permittee shall halt the operation immediately and shall not resume it until the Director gives approval to recommence injection.

5. Mechanical Integrity Request from the Director. The Director may by written notice require the permittee to demonstrate mechanical integrity at any time.

H. FINANCIAL RESPONSIBILITY

1. Cost Estimate for Plugging and Abandonment. The permittee estimates the present cost of plugging and abandonment of the permitted well as \$45,000, according to the plan contained in Attachment A.
2. Financial Responsibility. The permittee is required to maintain responsibility and resources to close, plug, and abandon the underground injection operation in a manner consistent with 40 CFR §144.52 (a)(7) and 40 CFR §144.60 through §144.70. The financial assurance mechanism is provided in Attachment D of this permit.

(a) Pursuant to 40 CFR §144.62(a), the permittee must maintain a written cost estimate, in current dollars, for the plugging and abandonment plan as specified in 40 CFR §146.10. The plugging and abandonment cost estimate at any point in the life of the facility operation must equal the maximum cost of plugging and abandonment at that time.

(b) Pursuant to 40 CFR §144.62(b), the permittee must adjust the cost estimate of plugging and abandonment for inflation within thirty (30) working days after each anniversary of the first estimate. The inflation factor is prescribed in 40 CFR §144.62(b).

(c) The permittee must revise the plugging and abandonment cost estimate whenever a change in the plugging and abandonment plan increases the cost of plugging and abandonment. The revised plugging and abandonment estimate must be adjusted for inflation as specified above in Permit Condition H 2 (b) above.

(d) If the revised plugging and abandonment estimate exceeds the current amount of the financial assurance mechanism, the permittee shall submit a revised mechanism to cover the increased cost within thirty (30) working days after the revision specified in Permit Conditions H 2 (b) and (c) above.

(e) The permittee must keep on file at the facility a copy of the latest plugging and abandonment cost estimate prepared in accordance with 40 CFR §144.62, during the operating life of the facility. Said estimate shall be available for inspection in accordance with the procedures in Permit Condition E 8 (b) above.

3. Insolvency. The permittee must notify the Director within ten (10) business days of any of the following events:

(a) The bankruptcy of the trustee or issuing institution of the financial mechanism, or

(b) Suspension or revocation of the authority of the trustee institution to act as trustee, or

(c) The institution issuing the financial mechanism losing its authority to issue such an instrument.

4. Notification. An owner or operator must notify the Director by certified mail of the commencement of voluntary or involuntary proceedings under Title 11 (Bankruptcy), U.S. Code naming the owner or operator as debtor, within ten (10) business days after the commencement of the proceeding. A guarantor of a corporate guarantee must make such a notification

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if he is named as debtor, as required under the terms of the guarantee.

5. Establishing Other Coverage. The owner or operator must establish other financial assurance or liability coverage acceptable to the Director, within sixty (60) working days of the occurrence of the events in Permit Condition H 3 or H 4 above.
-

I. CORRECTIVE ACTION

1. Compliance. The permittee shall comply with the approved corrective action plan contained in Attachment B of this permit and with 40 CFR §144.55 and §146.7.
 2. Injection Commencement. The permittee shall not commence injection in a well under this permit until all corrective action has been taken in accordance with the plan contained in Attachment B of this permit, and in accordance with 40 CFR §144.55.
-

J. CORRECTIVE ACTION UNDER §3004 (u) OF THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Continuing Releases at Permitted Facilities:

The permittee shall institute corrective action as necessary to protect human health and the environment for all releases of hazardous waste or hazardous constituents from any solid waste management unit, regardless of the time at which waste was placed in the unit. The schedules for compliance for completing such corrective action are contained in Attachment F.

PART II

WELL SPECIFIC CONDITIONS FOR UIC PERMITS

A. CONSTRUCTION

1. Siting [§146.12 (a)].

The injection well shall inject only into a formation which is beneath the lowermost formation containing, within one quarter mile of the well bore, an underground source of drinking water.

2. Casing and Cementing [§146.12(b)].

Notwithstanding any other provisions of this permit, the permittee shall maintain casing and cement in the well in such a manner as to prevent the movement of fluids into or between underground sources of drinking water for the expected life of the well. The casing and cement used in the construction of the well are shown in Attachment C of this permit. Any change shall be submitted by the applicant for the approval of the Director before installation.

3. Tubing and Packer Specifications [§146.12(c)].

Injection shall only take place through tubing with a packer set within the casing at the bottom of the long string casing immediately above the injection zone. Tubing and packer shall be designed for the expected service. The tubing and packer currently used in the well are represented in engineering drawings contained in Attachment C of this permit. Any changes shall be submitted by the applicant for the approval of the Director before installation.

4. Wellhead Specifications [§144.51(i)(4)].

A quarter-inch (1/4") female coupling and needle valve shall be

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installed on the wellhead, to be used for independent injection pressure readings.

B. FORMATION DATA [§144.52(b)(1)]

If the limit of the injection pressure as specified in Permit Condition Part II C 2 is reached, or at the time of any well rework, the applicant shall conduct formation testing to provide the following information:

1. The permeability capacity (transmissibility) of the injection zone;
2. The formation or reservoir pressure; and
3. The skin effect.

The results of formation testing shall be submitted to the USEPA with the next monthly report.

C. OPERATIONS

1. Injection Formation. Injection shall be limited to the Munising Formation in the subsurface interval between 3,887 feet and 4,258 feet, measured from ground level.
2. Injection Pressure Limitation [§146.13(a)(1)].

Except during stimulation, injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone.

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In no case, shall injection pressure initiate fractures in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water. The injection pressure and injected fluid shall be limited and monitored as specified in Attachment E.

3. Additional Injection Limitation [§146.13(a)(2)].

Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

4. Annulus Fluid and Pressure [§146.13(a)(3)].

The annulus between the tubing and the long string casing shall be filled with a fluid approved by the Director. The fluid currently maintained in the annulus is diesel oil. Any change in the annulus fluid shall be submitted by the applicant for the approval of the Director before replacement. The pressure on the annulus shall be higher than the injection pressure throughout the entire length of the tubing, at all times.

5. Automatic Warning and Shut-Off System. [§146.13 (b)(2)].

Within one (1) year of the effective date of this permit, the permittee shall install, continuously operate and maintain an automatic warning and shut-off system to stop injection in the following situations:

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- (a) Significant pressure change in the annulus;
- (b) Injection pressure reaches 1412 psig;
- (c) Significant change in the injection/annulus pressure differential.

Plans and specifications for the warning and shut-off system shall be submitted to the Director for approval prior to installation.

D. MONITORING

1. Monitoring Requirements [§144.51 (j)(1); §144.52(a)(5)].

Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the fluid to be analyzed shall be one described in Appendix I of 40 CFR Part 261 or an equivalent method. The sampling location shall be at the injection line after the injection pump. The permittee shall identify the types of the tests and methods used to generate the monitoring data in the Waste Analysis Plan required in Permit Condition Part II D 3 below. The monitoring program shall conform to the one described in Attachment E on pages 48 and 49, of this permit and with the approved Waste Analysis Plan.

2. Injection Fluid Analysis [§146.13(b)(1); §144.52(a)(5)].

Monitoring of the nature of injected fluids shall comply with applicable analytical methods cited and described in Table I of 40 CFR §136.3 or in Appendix III of 40 CFR Part 261 or in certain circumstances by other methods that have been approved by the Director. Until the Waste Analysis Plan required in Permit Condition Part II, D 3 has been approved, injection fluids shall be analyzed monthly for the

parameters specified in Attachment E on page 48. An initial analysis of the injection fluid is contained in Attachment E on pages 46 and 47.

3. Waste Analysis Plan [§144.52 (a)(5); §264.13 (b)].

The permittee shall develop and follow a written Waste Analysis Plan which describes the procedures which will be carried out to comply with Permit Conditions Part II D 1 and D 2 above. This plan shall be submitted to the Director for approval within forty-five (45) working days of the receipt of this permit and a copy of the plan shall be kept at the facility. At a minimum, the plan must specify:

(a) The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters;

(b) The test methods which will be used to test for these parameters; and

(c) The sampling method which will be used to obtain a representative sample of the waste to be analyzed and the frequency of sampling and analysis for each parameter.

4. Continuous Monitoring Devices [§146.13(b)(2)].

Continuous monitoring devices shall be installed and used to monitor injection pressure, flow rate and volume, and the pressure on the annulus between the tubing and the long string of casing. The monitoring results shall be submitted to the Director as specified in Permit Condition Part II E below and in Attachment E.

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5. Monitoring Wells [§146.13].

The permittee shall submit a ground water monitoring plan to detect any migration of fluids into and pressure build-up in the underground sources of drinking water, including the parameters to be measured and the frequency of monitoring, no later than forty-five (45) working days after the effective date of this permit. The elements of an acceptable ground water monitoring plan are set forth in Attachment E of this permit. The time for submission of this plan may be extended for good cause if the Director receives a request before the expiration of the forty-five (45) day period and said request demonstrates the need for an extension. The permittee may request waiver of this requirement within forty-five (45) working days of the effective date of this permit if he can demonstrate that there is no potential for fluid movement above the confining zone caused by injection activity or that underground sources of drinking water are completely absent within the area of review. Upon approval of the ground water monitoring plan, or waiver of the ground water monitoring requirement, the plan or waiver shall be incorporated into this permit. All extensions or waivers granted must be in writing.

E. REPORTING REQUIREMENTS [§146.13(c)]

The permittee shall submit all required reports to the Director at:

United States Environmental Protection Agency
Region V
230 South Dearborn Street, 5WD
Chicago, Illinois 60604
ATTN: UIC Section

1. Monthly Reports.

The permittee shall submit monthly reports of the following information:

- (a) Results of the injection fluid analyses specified in Permit Condition Part II D 2.
- (b) Daily and monthly average values for injection pressure, flow rate and volume, and annular pressure.
- (c) Daily maximum and minimum values for injection pressure with the corresponding values for flow rate and volume, and annular pressure.
- (d) Daily maximum and minimum values for flow rate and volume with the corresponding values for injection pressure and annular pressure.
- (e) Daily maximum and minimum values for annular pressure with the corresponding values for injection pressure and flow rate and volume.
- (f) A graph containing values for annular pressure, injection pressure, and flow rate and volume recorded at six (6) hour intervals. This information is to be displayed on a single graph, with annular pressure, injection pressure, and flow rate and volume described in individual contrasting colors.

2. Quarterly Reports.

If monitoring wells are installed, results of monitoring as specified in Permit Condition Part II D 5 shall be submitted on a quarterly basis.

3. Reports on Well Tests and Workovers [§146.13 (c)(2)].

In the first quarterly report after the activity, the permittee shall report to the Director the results of the following:

- (a) Demonstrations of mechanical integrity;
- (b) Other tests required by this permit;
- (c) Any well workover.

F. CLASS I HAZARDOUS WASTE MANIFEST

Permittees injecting hazardous wastes which are accompanied by a manifest or delivery document shall comply with the requirements of 40 CFR §144.14.

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PART III
ATTACHMENTS

ATTACHMENT A
PLUGGING AND ABANDONMENT PLAN

<u>CONTENTS</u>	<u>PAGE</u>
Description of Plugging and Abandonment Procedure	29
Plugging and Abandonment Plan	30

CLOSURE PLAN

PLUG AND ABANDONMENT PROCEDURE FOR ALL PROPOSED WASTE DISPOSAL WELLS

1. Move in and rig up.
2. Pump 100 bbls of 10 lb/gal. brine.
3. Dismantle wellhead and mount blowout preventor.
4. Remove the 2 3/8" OD injection tubing. If packer will not unseat, cut the tubing with a tubing charge immediately above the packer. Remove and decontaminate the tubing as required.
5. Set bridge plug in the long string casing.
6. Place cement from the top of the bridge plug to 3790'±.
7. Wait on cement four hours.
8. Balance Class "H" in two stages from 3834'± to surface.
9. Rig down and move out.
10. Wait on cement eight hours.
11. Cut off wellhead and casing 3' below ground level and weld steel plate on top of casing. Steel plate should be inscribed with Serial No. and date of plugging. Federal and State representatives will witness the plugging and will sign the plug and abandonment form.

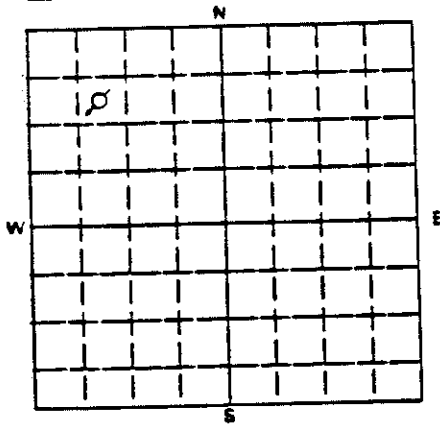
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

PLUGGING AND ABANDONMENT PLAN

NAME AND ADDRESS OF FACILITY

Rouge Manufacturing Complex
3001 Miller Road, Rm 2307
Dearborn, Michigan 48121

NAME AND ADDRESS OF OWNER/OPERATOR

Rouge Steel Company
3001 Miller Road
Dearborn, Michigan 48121LOCATE WELL AND OUTLINE UNIT ON
SECTION PLAT — 640 ACRESSTATE
MICOUNTY
Wayne

PERMIT NUMBER

MI-163-1W-0002

SURFACE LOCATION DESCRIPTION

SE 1/4 OF NW 1/4 OF NW 1/4 SECTION 28 TOWNSHIP 2S RANGE 11E

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface 855.9

Location ft from (N/S) N Line of quarter section

1076.4

and ft from (E/W) W Line of quarter section

TYPE OF AUTHORIZATION

- ☐ Individual Permit
☐ Area Permit
☒ Rul.

Number of Wells 2

Lease Name Wildcat

WELL ACTIVITY

- ☒ CLASS I
☐ CLASS II
☐ Brine Disposal
☐ Enhanced Recovery
☐ Hydrocarbon Storage
☐ CLASS III

Well Number 2

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT(LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
20"		10'	10'	24"
1 3/8"	48	137'	137'	17 1/2"
5/8"	32.3	664'	664'	12 1/4"
5 1/2"	15.5	4307'	4307'	

METHOD OF EMPLACEMENT OF CEMENT PLUGS

- ☒ The Balance Method
☐ The Dump Bailer Method
☐ The Two-Plug Method
☐ Other

CEMENTING TO PLUG AND ABANDON DATA

	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)	4.95"	4.95"					
Depth to Bottom of Tubing or Drill Pipe (ft.)	4307'±	3790'±					
Sacks of Cement To Be Used (each plug)	65	477					
Slurry Volume To Be Pumped (cu. ft.)	69	506					
Calculated Top of Plug (ft.)	3790'	3'					
Measured Top of Plug (if tagged ft.)	N/A	N/A					
Slurry Wt. (Lb./Gal.)	16.4	16.4					
Type Cement or Other Material (Class III)	Class H	Class H					

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)

From	To	From	To
Perforations 3896'	3906'		
3916'	3926'		
3936'	3946'		
3978'	4012'		
4030'	4050'		

Estimated Cost to Plug Wells

\$40,000 - \$45,000

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE (Please type or print)

Paul T. Sullivan, President
Rouge Steel Company

SIGNATURE

DATE SIGNED

February 21, 1985

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ATTACHMENT B
CORRECTIVE ACTION PLAN

CORRECTIVE ACTION PLAN

No improperly sealed, completed or abandoned wells were found within the area of review. In the unlikely event that some unforeseen well failure which might jeopardize the underground sources of drinking water were to occur during injection operations the following corrective action plan should be followed:

1. Immediately halt injection into all disposal wells in the area.
2. Notify U.S.E.P.A. and Michigan DNR personnel of the well failure.
(Telephone notification to occur within (24) twenty-four hours of discovery of the problem, and written confirmation to be transmitted by letter within (5) five days).
3. Conduct an investigation of the well failure and develop a plan of corrective action to eliminate the problem.
4. Perform the necessary remedial work.

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ATTACHMENT C
CONSTRUCTION DETAILS

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Description of Well Construction	34 - 35
Well Schematic	36

WELL CONSTRUCTIONWELL DESIGN

In general, the injection well has four concentric "strings" of steel casing plus injection tubing. Conductor casing was set to a depth of 10'. Casing was set to a depth of 137'± to prevent soil collapse while drilling to surface casing depth. Intermediate casing was set and cemented below the injection zone for waste disposal well No. 1 and to the top of the Bass Island Group (664'±). The long string casing or protection string is set into the Mt. Simon Formation (4308'±) and extends to the surface. It maintains well integrity and provides a protective casing through fresh water zones. The long string casing is also cemented to the surface providing additional isolation of fresh groundwater. To eliminate corrosion of the protective casing, wastewater is pumped down injection tubing. The tubing is separated from the long string casing by a fluid - filled annulus. Waste fluids cannot move up this annulus due to a mechanical sealing "packer" set above the injection zone.

Conductor Casing - Conductor casing was driven to 10'±.

Approximately 10'± of 20" O.D. carbon steel casing was installed. The conductor casing serves as a support foundation for other surface equipment necessary during drilling operations.

WELL CONSTRUCTION (Continued)WELL DESIGN (Continued)

Surface Casing - Surface casing is set to the base of the Dundee Formation Group. It protects the surface aquifers and provides protection from wastewater contamination. 13 3/8" O.D. carbon steel casing was set to a depth of 137'± and cemented to the surface.

Intermediate Casing - Intermediate casing was set to the top of the Bass Island Group. It seals off the injection zone of Ford Waste Disposal Well No. 1. 9 5/8" O.D. carbon steel casing was set to a depth of 664'± and cemented to the surface.

Long String Casing - The long string or protection casing was set into the Mt. Simon injection zone and cemented to the surface. Approximately 4307'± of 5 1/2" O.D. Carbon steel casing was required. Since the long string casing provides the primary protection against vertical migration of waste fluids, precautions were taken. The precautions included multiple stage cementing, increased hole size, centralized casing and proper cement density.

Injection Tubing - A total of 3864'± of 2 3/8" O.D. 4.60# EUE injection tubing was required. It was set into a packer at 3834'±. The packer seals the annular space between the long string casing and injection tubing. The annular space is pressurized and monitored as required to detect leaks or mechanical failures.

Disposal Well #2 - Project 12051

Elevations taken from Holly D. Shingler
(drill floor) to coincide with elevations
on all geophysical logs

Injection of Buffer-City Water

Volume: 6000,000 Gallons
Rate: 1 barrel/42 Gallons per Minute
Time: 17 Days
Initial Pump Pressure: 250# (anticipated)

12" casing to 10'
20" casing to 137'
15 1/2" casing to 137'

Ground level
24" hole to 10'
17 1/2" hole to 147'

9 1/2" casing to 664'

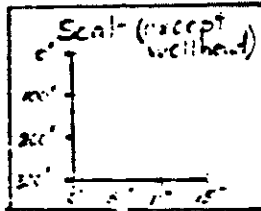
12 1/4" hole to 669'

All casing (except 20")
cemented to
surface

Annulus is filled
to surface with
#2 oil

Butler "R" Rock
set at 3,634'

2 1/2" tubing to 3865'



3,896'
Elev. Refractors
3,906'

3,916'
Elev. Refractors
3,926'

3,936'
Elev. Refractors
3,946'

3,960'

Thirty-three Refractors

4,02'

4,036'

Twenty-two Refractors

4,050'

Butler "R" Rock
set at 3,534'

2 1/2" tubing to 3865'

DISPOSAL ZONE
3,896' to 4,050'

Calculated*
Radius
of
Injected
Fluid
Front

Avg Est	Avg Est	Injected Fluid Front
1127	264nd	32'

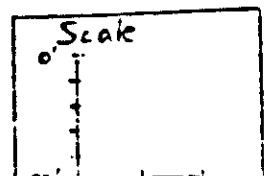
1527	1961nd	62'
------	--------	-----

1677	1185nd	49'
------	--------	-----

*Effect of fractures
included in
calculations

1677	443nd	23'
------	-------	-----

1557	352nd	27'
------	-------	-----



ATTACHMENT D
FINANCIAL ASSURANCE MECHANISM

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Schedule for Periodic Updating of Corporate Guarantee	38
Chief Financial Officer's Letter	39 - 44
Accountants' Opinions	45 - 46

SCHEDULE FOR PERIODIC UPDATING OF CORPORATE GUARANTEE FOR PLUGGING AND
ABANDONMENT [§144.63 (f)(5)]

Within ninety (90) days after the close of each fiscal year, the permittee shall submit updated financial assurance information to support the corporate guarantee for plugging and abandonment provided in this permit. The information submitted to the Director must consist of the following three items, as specified in paragraph (f)(3) of 40 CFR §144.63 (Subpart F):

(i) A letter signed by the owner's or operator's chief financial officer and worded as specified in §144.70(f); and

(ii) A copy of the independent certified public accountant's report on examination of the owner's or operator's financial statements for the latest completed fiscal year; and

(iii) A special report from the owner's or operator's independent certified public accountant to the owner or operator stating that:

(A) He has compared the data which the letter from the chief financial officer specifies as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and

(B) In connection with that procedure, no matters came to his attention which caused him to believe that the specified data should be adjusted.



Ford Motor Company

The American Road
P.O. Box 1899
Dearborn, Michigan 48121
November 2, 1984

Regional Administrator
U.S. Environmental Protection Agency
Region V
230 South Dearborn St.
Chicago, IL 60604

Subject: Underground Injection Financial Requirements
Rouge Steel Company

I am the chief financial officer of

Ford Motor Company
The American Road
Dearborn, Michigan 48121

This letter is in support of this firm's use of the financial test to demonstrate financial assurance, as specified in Subpart F of 40 CFR Part 144.

1. This firm is the owner or operator of the following injection wells for which financial assurance for plugging and abandonment is demonstrated through the financial test specified in Subpart F of 40 CFR Part 144. The current plugging and abandonment cost estimate covered by the test is shown for each injection well.

NONE.

2. This firm guarantees, through the corporate guarantee specified in Subpart F of 40 CFR Part 144, the plugging and abandonment of the following injection wells owned or operated by subsidiaries of this firm. The current cost estimate for plugging and abandonment so guaranteed is shown for each injection well.

EPA ID No.: not yet assigned.

Rouge Steel Company

3001 Miller Road

Dearborn, MI 48121

Acid Waste Disposal Well No. 3

\$45,000

Lat 42° 18' 05" Long: 83° 09' 55"

TWP 25, 11E Section 20 SW 1/4 section

2600 ft. from west line

100 ft. from south line

3. In States where EPA is not administering the financial requirements of Subpart F of 40 CFR 144, this firm as owner or operator or guarantor, is demonstrating financial assurance for the plugging and abandonment of the following injection wells through the use of a test equivalent or substantially equivalent to the financial test specified in Subpart F of 40 CFR 144. The current plugging and abandonment cost estimate covered by such a test is shown for each injection well.

NONE.

4. This firm is the owner or operator of the following injection wells for which financial assurance for plugging and abandonment is not demonstrated either to EPA or a State through the financial test or any other financial assurance mechanism specified in Subpart F of 40 CFR 144 or equivalent or substantially equivalent State mechanisms. The current plugging and abandonment cost estimate not covered by such financial assurance is shown for each injection well.

NONE.

This firm is required to file a Form 10K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this firm ends on December 31. The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statements for the latest completed fiscal year, ended December 31, 1983.

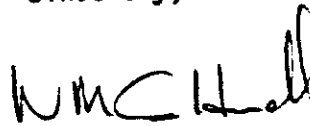
Alternative II

- | | | |
|--------|--|---|
| 1. (a) | Current plugging and abandonment cost | \$ 45,000 |
| (b) | Sum of the Company's financial responsibilities under 40 CFR 264 and 265, Subpart H, currently met using the financial test or corporate guarantee | \$10,070,355 |
| (c) | Total of lines (a) and (b) | \$10,115,355 |
| 2. | Current bond rating of most recent issuance of this firm and name of rating service | Not rated-private placement (Ford's Senior long-term debt is rated A- by Standard + Poor's and A3 by Moody's) |
| 3. | Date of issuance of bond | October 1, 1984 |
| 4. | Date of maturity of bond | October 1, 1999 |

- | | |
|---|----------------------|
| * 5. Tangible net worth | \$7,259 million |
| * 6. Total assets in the U.S. | \$13,229 million |
| | <u>Yes</u> <u>No</u> |
| 7. Is line 5 at least \$10 million? | <u>X</u> |
| 8. Is line 5 at least 6 times line 1 (c)? | <u>X</u> |
| 9. Are at least 90% of the firm's assets located in the U.S.? If not, complete line 10. | X |
| 10. Is line 6 at least 6 times line 1 (c)? | X |

I hereby certify that the wording of this letter is identical to the wording specified in 40 CFR 144.70 (f) as such regulations were constituted on the date shown immediately below.

Sincerely,



W. M. Caldwell
Executive Vice President
and Chief Financial Officer
November 2, 1984

GUARANTEE FOR PLUGGING AND ABANDONMENT

Guarantee made this second day of November 1984, by Ford Motor Company, a business corporation organized under the laws of the State of Delaware, herein referred to as guarantor, to the United States Environmental Protection Agency (EPA), obligee, on behalf of our subsidiary: Rouge Steel Company, 3001 Miller Rd., Dearborn, MI 48121.

Recitals

1. Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in 40 CFR 144.63(e).

2. Rouge Steel Company owns or operates the following Class I hazardous waste injection well covered by this guarantee:

Acid Disposal Well No. 3
3001 Miller Road
Dearborn, MI 48121

Lat. 42°18'05"
Long. 83°09'55"

3. "Plugging and abandonment plan" as used below refers to the plans maintained as required by 40 CFR Part 144 for the plugging and abandonment of injection wells as identified above.

4. For value received from Rouge Steel Company, guarantor guarantees to EPA that in the event that Rouge Steel Company fails to perform ("plugging and abandonment") of the above facility in accordance with the plugging and abandonment plan and other requirements when required to do so, the guarantor will do so or fund a trust fund as specified in 40 CFR 144.63 in the name of Rouge Steel Company in the amount of adjusted plugging and abandonment cost estimates prepared as specified in 40 CFR 144.62.

5. Guarantor agrees that, if at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor will send within 90 days, by certified mail,

Guarantee for Plugging and Abandonment

notice to the EPA Region in which the facility is located and to Rouge Steel that he intends to provide alternate financial assurance as specified in 40 CFR 144.63 in the name of Rouge Steel Company. Within 30 days after sending such notice, the guarantor will establish such financial assurance if Rouge Steel Company has not done so.

6. The guarantor agrees to notify the Regional Administrator, by certified mail, of a voluntary or involuntary case under Title 11, U.S. Code, naming guarantor as debtor, within 10 days after its commencement.

7. Guarantor agrees that within 30 days after being notified by an EPA Regional Administrator of a determination that guarantor no longer meets the financial test criteria or that he is disallowed from continuing as a guarantor of plugging and abandonment, he will establish alternate financial assurance, as specified in 40 CFR 144.63, in the name of Rouge Steel Company if Rouge Steel Company has not done so.

8. Guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the plugging and abandonment plan, the extension or reduction of the time of performance of plugging and abandonment or any other modification or alteration of an obligation of Rouge Steel Company pursuant to 40 CFR Part 144.

9. Guarantor agrees to remain bound under this guarantee for so long as Rouge Steel Company must comply with the applicable financial assurance requirements of 40 CFR Part 144 for the above-listed facilities, except that guarantor may cancel this guarantee by sending notice by certified mail, to the EPA Regional Administrator for the Region in which the facility is located and to Rouge Steel Company, such cancellation to become effective no earlier than 120 days after actual receipt of such notice by both EPA and Rouge Steel Company as evidenced by the return receipts.

10. Guarantor agrees that if Rouge Steel Company fails to provide alternate financial assurance and obtain written approval of such assurance from the the EPA Regional Administrator within 90 days after a notice of

Guarantee for Plugging and Abandonment

cancellation by the guarantor is received by both the EPA Regional Administrator and Rouge Steel Company, guarantor will provide alternate financial assurance as specified in 40 CFR 144.63 in the name of Rouge Steel Company.

11. Guarantor expressly waives notice of acceptance of this guarantee by the EPA or by Rouge Steel Company. Guarantor also expressly waives notice of amendments or modifications of the plugging and abandonment plan.

I hereby certify that the wording of this guarantee is identical to the wording specified in 40 CFR 144.70(f).

Effective date: November 2, 1984



W. M. Caldwell
Executive Vice President
and Chief Financial Officer
Ford Motor Company

Signature of witness or notary:



Coopers
& Lybrand

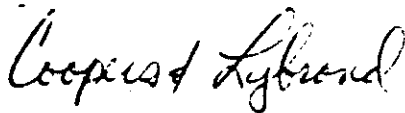
certified public accountants

Ford Motor Company
Dearborn, Michigan

We have examined the consolidated financial statements of Ford Motor Company and Consolidated Subsidiaries for the year ended December 31, 1983, and have issued our report thereon dated February 10, 1984. Our examination was made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

Mr. W. M. Caldwell, Ford Motor Company Executive Vice President and Chief Financial Officer, stated in a letter dated November 2, 1984 to the United States Environmental Protection Agency Regional Administrator (Region V), that tangible net worth and total assets in the United States at December 31, 1983 aggregated \$7,259 million and \$13,229 million, respectively, and that such assets in the United States were less than 90 percent of total assets. We have compared this data with corresponding data which we have derived from the financial statements referred to above.

In connection with the aforementioned procedure, no matters came to our attention which caused us to believe that the data specified above should be adjusted.



Coopers & Lybrand
400 Renaissance Center
Detroit, Michigan 48243
November 2, 1984

the Board of Directors and Stockholders
of Ford Motor Company

We have examined the consolidated balance sheet of Ford Motor Company and Consolidated Subsidiaries as of December 31, 1983 and 1982, and the related consolidated statements of income, stockholders' equity and changes in financial position for each of the three years in the period ended December 31, 1983. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the financial statements referred to above present fairly the consolidated financial position of Ford Motor Company and Consolidated Subsidiaries at December 31, 1983 and 1982, and the consolidated results of operations and changes in financial position for each of the three years in the period ended December 31, 1983, in conformity with generally accepted accounting principles

consistently applied during the period except for the change, with which we concur, in the method of accounting for foreign-currency translation, as described in Note 1 of Notes to Financial Statements.

Coopers & Lybrand

Coopers & Lybrand
400 Renaissance Center
Detroit, Michigan 48243
(313) 446-7100
February 10, 1984

Supplementary Disclosures

Worldwide Sales and Operating Income by Line of Business (Dollar amounts in millions)

	1983		1982		1981	
	Amount	Percent	Amount	Percent	Amount	Percent
Sales						
Automotive	\$40,971	92%	\$33,683	91%	\$34,673	91%
All Other	3,484	8	3,384	9	3,574	9
Total	\$44,455	100%	\$37,067	100%	\$38,247	100%
Operating Income (Loss)						
Automotive	\$ 1,833	102%	\$ (361)	(75)%	\$(1,246)	(99)%
All Other	(29)	(2)	(123)	(25)	(10)	(1)
Total	\$ 1,804	100%	\$ (484)	(100)%	\$(1,256)	(100)%

ATTACHMENT E
OPERATING, MONITORING AND REPORTING

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OPERATING, MONITORING AND REPORTING REQUIREMENTS

<u>CHARACTERISTIC</u>	<u>LIMITATION</u>	<u>MINIMUM MONITORING REQUIREMENTS</u>	<u>MINIMUM REPORTING REQUIREMENTS</u>
	<u>Maximum</u>	<u>Frequency</u>	
*Injection Pressure for each well	1412 psig	continuous	monthly
Annulus Pressure for each well		continuous	monthly
Flow Rate		continuous	monthly
Cumulative Volume		continuous	monthly
Specific Gravity		monthly	monthly
Chemical Composition of Injected Fluid		monthly	monthly

* $[\cdot 8 - (\cdot 433)S_g]D = \text{Pressure}$

$[\cdot 8 - (\cdot 433)(1.00)]3877 = 1426.5 \text{ psia} - 14.3 = 1412.2 \text{ psig}$

The following parameters will be analyzed monthly:

- 1) pH
- 2) Specific gravity
- 3) Benzene
- 4) Phenols
- 5) Total suspended solids
- 6) Naphthalene
- 7) Cyanide
- 8) Chlorine
- 9) Sulfur



HYDRO RESEARCH SERVICES
Water Management Division
Clow Corporation

408 Auburn Avenue
Pontiac, MI 48058

313 334-1630
313 334-4747

April 10, 1985

Ford Motor Company
Rouge Manufacturing
3001 Miller Road
Dearborn, MI 48212
Attn: Tom Weber

NP - 50539 Rel - 94-723566

Sample Received: 2/22/85

Hydro Number:

88943

Client I.D.:

No: 2
Coke Oven

Total Solids, TS, %	<0.1
Total Volatile Solids, TVS, 600 °C, mg/l	300
Total Cyanide, CN, mg/l	93
Oxidizable Cyanide, CN, mg/l	91
Unoxidizable Cyanide, CN, mg/l	2
Phenol, mg/l	220
Nitrogen Ammonia, NH ₃ /N	59
pH	7.1
Chlorine Demand, Cl, mg/l	400
Sulfate, SO ₄ , mg/l	39
Total Alkalinity as CaCO ₃ , mg/l	290
Total Hardness as CaCO ₃ , mg/l	36
Bicarbonate Alkalinity as CaCO ₃ , mg/l	290
Carbonate Alkalinity as CaCO ₃ , mg/l	<2
Iron Dissolved, Fe, mg/l	<0.06
Iron, Fe, mg/l	<0.06
Oil & Grease, mg/l	17
B.O.D. ₅ , mg/l	360



HYDRO RESEARCH SERVICES
Water Management Division
Clow Corporation

408 Auburn Avenue
Pontiac, MI 48058

313 334-1630
313 334-4747

April 10, 1985

continued

Ford Motor Company
Rouge Manufacturing
3001 Miller Road
Dearborn, MI 48212
Attn: Tom Weber

NP - 50539 Rel - 94-723566

Sample Received: 2/22/85

Hydro Number:

Client I.D.:

88943

No: 2
Coke Oven

Calcium, Ca, mg/l

11.0

Napthalene (Crystalline), mg/l

0.8

Napthalene, dissolved, mg/l

2.7

Total Sulfur, S, mg/l

320

Organic Sulfur, mg/l

Procedure not available

Ammonium Sulfide, mg/l

Procedure not available

Polysulfide, mg/l

Procedure not available

Total Sulfides

7.0

Russell K. Smith
Laboratory Supervisor

GROUND WATER MONITORING PLAN

The permittee shall submit in accordance with §146.13 (b)(4), a plan for monitoring the ground water quality and formation fluid pressure of the first permeable zone immediately overlying the confining layer above the injection zone. This plan must be submitted to the Director for approval no later than 45 days from the effective date of this permit. A schedule of implementation must be included.

The plan must include the following:

- A. A comprehensive report describing the local hydrogeologic framework in which the injection well operates. The report should include:
 1. An interpretation of formation-specific geologic information relating to; a) the adequacy of the confining layer or system, b) the locations and physical characteristics of overlying permeable zones including all USDWs, and c) an evaluation of faulting, fracturing and jointing;
 2. Identification of the proposed monitoring zone and a complete description of methods which will be used to determine aquifer parameters such as permeability, transmissivity and storage coefficient;
 3. An evaluation of the vulnerability to contamination of the lowest USDW; and,
 4. Based on new data developed in items 1 and 2 above, modify or compute the zone of endangering influence as per 40 CFR §146.6.

Specific information should be based on historical and current operating records, research of available geologic literature and/or logs from nearby wells. An evaluation should be made of the reliability of the above information and any data gaps identified. Where adequate information does not exist, it must be supplied by actual measurements.

B. Based on the above information, a monitoring well design and operating plan showing:

1. The number and location of wells designed to: a) detect any leakage of injected fluids above the confining zone; and b) monitor pressure changes by continuous water level recording. A minimum of three (3) wells will be required to define direction of flow; wells should be located as close as physically possible to the injection well.
2. Well specifications, including:
 - a) drilling and development methods
 - b) construction details
 - c) quality assurance plan
 - d) safety plan
 - e) proposed mechanical integrity determination
 - f) step drawdown test to determine well efficiency
 - g) television survey if drilling mud is used
3. A sampling plan, including;
 - a) proposed data to be collected during drilling
 - b) proposed monitoring parameters, including background formation fluid parameters, waste indicator "fingerprint" parameters, and pressure

- c) sample collection procedures
- d) preservation and shipment
- e) analytical procedures
- f) chain of custody control

4. Reporting proposal, including;

- a) initial background survey
- b) quarterly submittal of required data
- c) annual interpretive summary report

Waiver Demonstration

An exemption from ground water monitoring requirements may be granted if the applicant can conclusively demonstrate that there is no potential for fluid movement above the confining zone caused by the injection activity, or that USDW's are completely absent within the area of review. Examples of acceptable exemption criteria include:

- ° The demonstrated absence of complex geologic structures such as faults; and
- ° A sufficiently thick confining formation (e.g. 500 feet of clay or shale).
- ° The potentiometric surface of the injection zone will not exceed the bottom of the lowest USDW.

Where the above criteria cannot be adequately demonstrated, direct measurement of vertical permeability of the confining system may be required.

ATTACHMENT F
CONTINUING RELEASES/CORRECTIVE ACTION PLAN

CONTINUING RELEASES/CORRECTIVE ACTION

A. Background

The Hazardous and Solid Waste Amendments (HSWA) of 1984 contain a requirement for corrective action of continuing releases. This provision is established in the new Section 3004(u) of the Act (Section 206 of HSWA). Section 3004(u) requires treatment, storage and disposal (TSD) facilities seeking RCRA permits to take corrective actions for all releases of hazardous waste or constituents from any solid waste management unit (SWMU) regardless of when the waste was placed in the SWMU. In order to fully appreciate the implications of the statutory requirements, the following definitions are made:

- (1) Facility - All contiguous land, structures and other appurtenances and improvements on the land used for treating, storing or disposing of hazardous waste. It includes the entire site that is under the control of the owner or operator engaged in hazardous waste management.
- (2) Corrective Action - As described in 40 CFR §264.100
- (3) Releases - Discussed in the preamble to the codification rule, includes any concentration of an Appendix VIII constituent in excess of ground water protection standards where such constituent has emanated from a SWMU. Releases to the air and surface waters are also included. Region V staff believes that releases should be defined at least as broadly as the term is defined in CERCLA
- (4) SWMU - Any contiguous land, structures, other appurtenances, and improvements on the land used for storage, treatment disposal, collection, source separation, transfer, processing,

SWMU - resource recovery or conservation of any solid waste (as defined in 40 CFR §261.2). It includes any unit at the facility from which hazardous constituents might migrate, irrespective of whether the units were intended for the management of solid and/or hazardous wastes.

B. Implementation of Corrective Action

The process of implementing Section 3004(u) will take place in three stages, with each stage consisting of several specific steps, as follows:

1. Preliminary Assessment. Assessment of continuing releases is required for all permits issued after November 8, 1984. If any of the requested information has been previously submitted to the Director, include the original source as a reference on the copy provided in the required report. The permittee is required to submit the following information to the Director on or before November 8, 1985. Failure to submit the required information or falsification of any submitted information is grounds for the termination of this permit (40 CFR §144.40). All information submitted must be certified as required by 40 CFR §144.32.
 - a. Topographic Maps - Provide map(s) showing the facility and a distance of 1,000 feet around the property line at a scale of one inch equal to not more than 200 feet. In addition to showing the location of the permitted hazardous waste facility and management units, the permittee must locate on the map each existing and former solid waste management unit (SWMU), regardless of its permitting status.
 - b. Description of Units - For each SWMU, provide a history of construction, including engineering drawings, foundations, materials of construction, dimensions, capacity and ancillary systems. Include location, design, construction, and description of all monitoring systems (air, surface water, ground water, etc.). If the SWMU is not in use, describe the methods utilized to close the facility and all construction related to closure.
 - c. Description of Operation - For each SWMU, provide a history of the unit's function and all of the wastes processed or

disposed of at the unit. Include the hazardous waste constituents processed or disposed of, the time frames of operation, and quantities handled during those time frames.

- d. Description of Releases - For each SWMU, describe any release or potential release originating at each SWMU. Include the suspected date of release, the type of hazardous waste or hazardous waste constituent, the quantity released, the environmental media affected, the nature of the release and present migration, and the circumstances and cause of the release. Provide any available data which would quantify the nature and extent of any environmental contamination including the results of air, soil, surface and ground water sampling and analysis. Provide any available data which would indicate that no releases are present, if applicable.

2. Remedial Investigations and Corrective Action Plan Development. If hazardous wastes or constituents have been released, no later than six (6) months after the effective date of this permit, the permittee shall conduct remedial investigations, develop a proposed corrective action plan, and submit a report on the investigations to the Director as follows:

- (a) Site investigation, including but not limited to, hydrological data, both surface and subsurface sampling, and identification of background prior to contamination;
- (b) Remedial investigations by owner/operator to identify/characterize releases;
- (c) Develop an appropriate proposed corrective action plan and cost estimate; and
- (d) Provide a financial assurance mechanism to cover the cost of implementing the corrective action plan.

3. Corrective Action Plan Implementation. Within thirty-six (36) months after the Director's approval, the permittee shall implement the corrective action plan as follows:

- (a) 6 months after approval - Complete engineering design;
- (b) 6 months after approval - Prepare contract documents and award construction bids or equivalent in-house action.
- (c) 18 months after approval- Complete corrective action plan

C. Permit Modification

The Director may modify this permit to include additional requirements or modify the Schedule of Compliance as appropriate in accordance with 40 CFR §270.41 and Section 212 of HSWA. If major permit modification is needed, USEPA will publish a public notice and allow for public review and comment.

11 OCT 1985

Herbert Weinberg
Vice President, Engineering and Facilities
Rouge Steel Company
3001 Miller Road
P.O. Box 1631
Dearborn, Michigan 48121-1631

Re: Final Permit # MI-163-1W-0002

Dear Mr. Weinberg:

Enclosed is the EPA final permit for the hazardous waste disposal well Disposal Well #2 (EPA Permit # MI-163-1W-0002) in Wayne County, Michigan. This action constitutes issuance of a permit.

In accordance with 40 CFR §124.15, this permit will become effective on the date specified in the permit, provided that no request for an administrative review is granted by the Agency. In the event that such a request is granted, the contested provisions of the permit will be stayed and will not become effective until the administrative review process is completed. All uncontested provisions of the permit will be effective and enforceable in accordance with the provisions of 40 CFR §124.16(a).

If you wish to request an administrative review, you must submit such request to the Office of the Administrator, Attn: Ronald L. McCallum, Chief Judicial Officer A-101, USEPA, 401 M Street, S.W., Washington, D.C. 20460, within thirty (30) days from the date the permit was issued (signed by EPA). The request will be timely if post-marked within the thirty (30) day time period. For the request to be valid, it must conform to the requirements of 40 CFR §124.19.

In addition, please take note of the following permit conditions:

- 1) Part I, E. 12(g) which requires that you report within thirty (30) days that you have read and are personally familiar with all terms and conditions of this permit,
- 2) Part II, D. 3 which requires that you submit the waste analysis plan within forty-five (45) days of the receipt of this permit,

- 3) Part II, D. 5 which requires that you submit the ground water monitoring plan within forty-five (45) days of the effective date of this permit, and
- 4) Part I, J. which requires that you submit the preliminary assessment of continuing releases, as required by the Hazardous and Solid Waste Amendments of 1984, by November 8, 1985.

If there are any questions please contact Mr. Michael Gentleman at (312) 886-1507.

Sincerely yours,

/S/Charles H. Sutfin

Charles H. Sutfin
Director, Water Division

Enclosure

5WD-13:J.Bleem:jt:10-04-85

6/1/85

GLP 10-7-85
m. 10-7-85

5WD-13
10/8/85

aw

11 OCT 1985

Herbert Weinberg
Vice President, Engineering and Facilities
Rouge Steel Company
3001 Miller Road
P.O. Box 1631
Dearborn, Michigan 48121-1631

Re: Final Permit # MI-163-1W-0002

Dear Mr. Weinberg:

Enclosed is the EPA final permit for the hazardous waste disposal well Disposal Well #2 (EPA Permit # MI-163-1W-0002) in Wayne County, Michigan. This action constitutes issuance of a permit.

In accordance with 40 CFR §124.15, this permit will become effective on the date specified in the permit, provided that no request for an administrative review is granted by the Agency. In the event that such a request is granted, the contested provisions of the permit will be stayed and will not become effective until the administrative review process is completed. All uncontested provisions of the permit will be effective and enforceable in accordance with the provisions of 40 CFR §124.16(a).

If you wish to request an administrative review, you must submit such request to the Office of the Administrator, Attn: Ronald L. McCallum, Chief Judicial Officer A-101, USEPA, 401 M Street, S.W., Washington, D.C. 20460, within thirty (30) days from the date the permit was issued (signed by EPA). The request will be timely if post-marked within the thirty (30) day time period. For the request to be valid, it must conform to the requirements of 40 CFR §124.19.

In addition, please take note of the following permit conditions:

- 1) Part I, E. 12(g) which requires that you report within thirty (30) days that you have read and are personally familiar with all terms and conditions of this permit,
- 2) Part II, D. 3 which requires that you submit the waste analysis plan within forty-five (45) days of the receipt of this permit,

August 8, 1985

Draft Permit #MI-163-1W-0002

Joseph F. Harrison
Chief, Safe Drinking Water Branch

Tom Belk
Chief, Ground Water Protection Branch

Enclosed is a copy of a draft Underground Injection Control permit #MI-163-1W-0002 which we have processed through this office. The public comment period for this permit ends August 17, 1985. If you have comments you must submit them to us by this date in order for your comments to be considered in the issuance of this permit.

We are, of course, always interested in hearing your constructive advice on our overall permitting procedures.

Enclosure

5WD-13:J.Bleem:sb:8/8/85

GLP 8/8/85
\$ 8/8/85

5WD-95
8/8/85

19 JUL 1985

Roy T. Lewis
Project Engineer
Rouge Steel Company
3001 Miller Road
P.O. Box 1631
Dearborn, Michigan 48121-1631

Re: EPA Permit #MI-163-1W-0002

Dear Mr. Lewis:

In accordance with Federal Underground Injection Control Section permitting procedures, enclosed is a copy of the draft permit for the Class I, hazardous waste well, Ford Disposal Well #2 (EPA Permit #MI-163-1W-0002) in Wayne County, Michigan.

According to Federal Regulation 40 CFR 124.10(b) a public notice of the preparation of a draft permit shall allow as least 30 days for public comment. At the end of the public comment period you will be notified of any significant changes in the draft permit resulting from comments received.

A public hearing will also be held. Significant comments from the public hearing will also be considered in the preparation of the final permit.

Sincerely yours,

Gregory L. Parker, Chief
Underground Injection Control Section

Enclosure

5WD-13:J.Bleem:7-3-85:jb

GLP 7/19/85
JB 7/3/85
5WD-13
7/8/85

PUBLIC NOTICE
UNDERGROUND INJECTION CONTROL PROGRAM

PURPOSE OF PUBLIC NOTICE

The purpose of this notice is to solicit written comments on the proposal by the Region V office of the U.S. EPA to issue a permits to inject fluids underground via a Class I hazardous, waste ammonia liquor, injection wells.

BACKGROUND

Part C of the Safe Drinking Water Act (SDWA) specifically mandates regulation of the underground injection of fluids through wells to assure that the quality of underground sources of drinking water is protected. Section 1421 of the SDWA requires EPA to administer Underground Injection Control (UIC) programs in states which do not have approved UIC programs. Michigan has not acquired primacy over the UIC program, therefore EPA is administering the permit program pursuant to regulations at 40 CFR Part 147.

EPA intends to permit one Class I, hazardous waste well. It is owned and operated by Rouge Steel Company, 3001 Miller Road, P. O. Box 1699, Dearborn, Michigan. Rouge Steel Company has applied to the Michigan Department of Natural Resources for permission to establish a coke oven waste disposal well according to Public Act 315 of the Michigan Mineral Well Act and to EPA for a permit according to EPA regulations at 40 CFR Part 144.

The well is to be located in the following area:

Wayne County: T2S, R11E, S28, NW 1/4 (EPA Permit #MI-163-1W-0002)

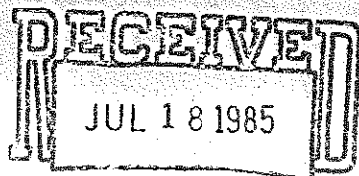
PUBLIC COMMENTS

Written comments must be received within 30 days of the date of this notice. A public hearing is scheduled at the McNamara Federal Building, 477 Michigan Avenue, Detroit, Michigan 48226 at 2:00 p.m. on August 21, 1985. Written comments will be accepted at the address listed below. The administrative record for this permit action is available for review between 9 a.m. and 4 p.m. at the address listed below. It is recommended that you telephone Mr. Micheal Gentleman at (312) 886-1507, before visiting the Region V office:

U.S. Environmental Protection Agency (5WD)
UIC Section (Attn: Gregory L. Parker, Chief)
230 S. Dearborn Street
Chicago, IL 60604

A copy of the draft permit is also available for viewing at:
City of Detroit Health Department, Community and Industrial Hygiene Division,
1151 Taylor, Herman Kiefer Complex, Bldg. 4, Detroit, Michigan 48202.

Questions regarding this Notice may be directed to Mr. Micheal Gentleman on behalf of the UIC Section of the U.S. EPA at (312) 886-1507.



U.S. EPA
GROUND WATER SECTION

B. 7/12/85

5WD-13

July 19, 1985

Harry Boyle
City of Detroit Health Dept.
Community and Industrial Hygiene Division
1151 Taylor
Herman Kiefer Complex, Bldg. 4
Detroit, Michigan 48202

Re: Draft Permit #MI-163-1W-0002

Dear Mr. Boyle:

Per the telephone conversation with Jeanice Bleem of the Underground Injection Control Section, enclosed is a copy of the draft permit which was discussed. We ask that you hold this draft permit until we notify you that the public comment period, 30 days after public notice is published in the newspaper, has ended. We appreciate your assistance in the permitting process.

Sincerely yours,

Gregory L. Parker, Chief
Underground Injection Control Section

Enclosure

GLP 7/19/85

5WD-13:J.Bleem:ST:6-27-85



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

230 SOUTH DEARBORN ST.

CHICAGO, ILLINOIS 60604

*Tom, 7-16
I think we
have the info
to fill this
certification
pg*

REPLY TO THE ATTENTION OF:
SHE-12

13 JUL 1985

Dear Owner/Operator:

On November 8, 1984, the Solid Waste Disposal Act (also known as the Resource Conservation and Recovery Act) was amended. These amendments, known as the Hazardous and Solid Waste Amendments of 1984 (HSWA), Public Law 98-616, included a provision which may affect the regulatory status of all interim status land disposal facilities. Section 213(a) of the HSWA amends Section 3005(e) of the Solid Waste Disposal Act to state, in part, as it applies to interim status land disposal facilities in existence on the date of enactment of the HSWA:

- (2) In the case of each land disposal facility which has been granted interim status under this subsection before the date of enactment of the Hazardous and Solid Waste Amendments of 1984, interim status shall terminate on the date 12 months after the date of enactment of such Amendments unless the owner or operator of such facility
 - (A) ~~applies for a final determination regarding the issuance of a permit under subsection (c) for such facility before the date 12 months after the date of the enactment of such Amendments; and~~
 - (B) ~~certifies that such facility is in compliance with all applicable ground-water monitoring and financial responsibility requirements.~~

In view of the Loss of Interim Status Provision quoted above, by November 8, 1985, all interim status land disposal facilities are required to certify compliance with applicable ground-water monitoring and financial responsibility requirements and apply for a final determination with regard to the issuance of a permit or they will lose interim status and be required to cease the introduction of hazardous waste into affected units and properly close such units. In view of the significance of this self-implementing provision, the Agency is informing you of its applicability and requirements.

Applicability

The loss of interim status provision applies to all interim status land disposal units. For the purpose of this provision, a land disposal unit is defined to include the following:

- ° Landfills
- ° Land treatment
- ° Surface Impoundments (for storage, treatment, and/or disposal)*
- ° Waste Piles (for storage, treatment, and/or disposal)*

Class I Hazardous Waste Underground Injection Wells

This provision applies to owners/operators of land disposal facilities who have fully complied with the requirements for interim status under Section 3005(e) of RCRA and 40 CFR §270.10 until final administrative disposition of their permit application is made, and to those owners/operators of facilities in existence on November 19, 1980, who have failed to provide timely notification as required by Section 3010(a) of RCRA, and/or failed to file Part A of the Permit Application as required by 40 CFR 270.10(e) and (g). This provision also applies to land disposal facilities that received a permit from a State with Phase IIC or Final Authorization, or a UIC permit from a primacy State after November 8, 1984, until such time as the HSWA requirements of the permit are issued by EPA in the case of RCRA permits, or until such time as the RCRA permit addresses corrective action for all units at a facility in the case of UIC permits issued to Class I hazardous waste underground injection wells.

Compliance Certification Requirements

Under the loss of interim status provision, interim status land disposal facilities must certify compliance with all "applicable" ground-water monitoring and financial responsibility requirements. These requirements vary depending upon the State in which a facility is located. The "applicable" requirements with which a facility must certify specifically depend upon the RCRA program authorization status of the State in which the facility is located. To certify compliance with "all applicable ground-water monitoring and financial responsibility requirements":

- ° Facilities located in a State with Phase I Authorization under the RCRA program must certify compliance with the State specific ground-water monitoring requirements. In States with financial responsibility requirements incorporated as a part of their RCRA programs, facilities must certify compliance with State specific financial responsibility requirements.
- ° Facilities located in a State with Phase II or Final Authorization must certify compliance with State specific ground-water monitoring and financial responsibility requirements.

* To retain interim status, your facility must certify compliance with applicable requirements for these units regardless of the intended final disposition of the waste at closure.

- ° Facilities located in a State with a Federally managed RCRA program must certify compliance with 40 CFR Part 265 Subparts F and H ground-water monitoring and financial responsibility requirements.
- ° Facilities with Class I hazardous waste underground injection wells authorized by rule (i.e. that do not yet have their UIC permit) must certify compliance with 40 CFR 144.28(g)(1)(ii) and 40 CFR 144.28(d) "ground-water monitoring" and financial responsibility requirements or equivalent State requirements.
- ° Facilities with Class I hazardous waste underground injection wells with UIC permits issued by primacy States after November 8, 1984, must certify compliance with 40 CFR 146.13(b)(4) (where applicable) and 40 CFR 144.60 through .70.

Within EPA Region V, the States have the following authorization status:

Illinois	Phase I
Indiana	Phase I
Michigan	None
Minnesota	Final
Ohio	Phase I
Wisconsin	Phase I

To certify compliance with the appropriate regulations, the owner or operator must include the following information on their certification:

- ° Name of facility owner/operator
- ° Name of facility
- ° Facility location
- ° EPA ID number
- ° Name of unit(s) being certified, as identified on a topographic map (using same information submitted on the Part A permit application)
- ° Topographic map with labeled interim status land disposal units
- ° Statement of compliance with all applicable ground-water monitoring and financial responsibility requirements for each unit being certified
- ° Statement of knowing and willfull certification and acknowledgement of penalties for false certification (See 40 CFR 270.11(d)).

Written certifications must be signed by a person according to requirements set forth in 40 CFR 270.11(a). Originally signed copies of your certification(s) must be sent to the EPA Region, and to the State in which the facility is located. If a facility is located in a State with a Federally run RCRA program, the owner/operator is only required to submit a copy of these documents to the EPA Region in which the facility is located.

The owner/operator must assess whether its facility is in compliance. If a facility has any information or knowledge that it is in violation of applicable ground-water monitoring or financial responsibility requirements or both, it may not certify compliance. The Agency considers such certification false and subject to criminal penalties.

Requirements for "Application for Final Determination..."

Facilities wishing to retain interim status under this provision are required to submit a final operating permit application* by November 8, 1985. A copy of the final operating permit application must be submitted to the EPA Region, and to the State in which the facility is located, if the State has Phase IIC or Final Authorization. If the facility is located in a State with a Federally managed RCRA permit program, the facility is required to submit a final operating permit application to the Region in which the facility is located.

If land disposal units at a facility will be closing on or before November 8, 1985, the owner/operator is required to comply with all applicable closure and post-closure requirements in States with Federally run programs as established under 40 CFR Part 265 Subpart G, and in States with Phase I, II or Final Authorization under applicable State closure and post-closure requirements. If a facility desires to retain interim status in a case of closure, the owner/operator of the facility must "apply for final determination..." by submitting a closure plan and a post-closure permit application by November 8, 1985. An exception to the above arises in the case of facilities intending to close storage or treatment surface impoundments and waste piles by removal of waste pursuant to 40 CFR §265.228(a) or (b), or §265.258(a), or equivalent State requirements. These facilities are required to submit a closure plan to satisfy the application requirement. A post-closure permit application may be required of these facilities if, at any time, it is determined that the standards for closure by removal of waste cannot be met.

Therefore, facilities that are closing which certify compliance and submit their closure plan, and, as applicable, their post-closure permit application, will retain interim status on November 8, 1985. However, all facilities intending to receive waste after November 8, 1985, must submit a final operating permit application.

If the owner/operator of a facility does not intend, or is unable to retain interim status beyond November 8, 1985, the owner/operator will be required to submit a closure plan and post-closure permit application in accordance with 40 CFR 265 Subpart G and 40 CFR Part 270, or equivalent State requirements. For such a facility, the closure plan is due no later than 15 days following the termination of interim status (See 40 CFR §265.112(c)(1)). It should be noted that facilities losing interim status as a result of this provision may be required to take corrective action.

*In some States and in States with Federally managed RCRA programs, this is referred to as a Part B permit application.

Appropriate enforcement action will be taken where units not retaining interim status continue to receive hazardous waste after November 8, 1985, or fail to comply with applicable closure and post-closure requirements. The Agency anticipates capacity constraints at off-site commercial treatment, storage and disposal facilities, which may affect the ability of certain facilities to utilize off-site disposal.

In summary, the Loss of Interim Status Provision is a self-implementing provision. Your interim status land disposal units will lose interim status on November 8, 1985, unless your facility certifies compliance with all applicable ground-water monitoring and financial responsibility requirements, and submits a final operating permit application, or, if you intend to close your facility, a closure plan and post-closure permit application. The certification should be sent to U.S. EPA, Region V, Waste Management Division, RCRA Enforcement Section, 230 South Dearborn Street, Chicago, Illinois 60604. Except for facilities in Minnesota, the permit application or post-closure permit application should be sent to RCRA Activities, U.S. EPA, Region V, P.O. Box A3587, Chicago, Illinois 60690-3587. Except for facilities in Michigan, the closure plan should be sent to the State.

Sincerely yours,

Wm. E. Munro

William E. Munro, Chief
RCRA Enforcement Section

April 30, 1985

Herbert I. Weinberg,
Vice-President
Rouge Steel Company
3001 Miller Road
Dearborn, Michigan 48121-1631

Dear Mr. Weinberg:

The Underground Injection Control Section of Region V USEPA has recently adopted a policy to request a monitoring well plan from all Class I operators in conjunction with the processing of UIC permit applications. This policy is based on the requirements of 40 CFR 144.28(g) and 145.13(b) which allow the Regional Administrator to require the installation and use of monitoring wells within the area of review to detect fluid migration and measure pressure in underground sources of drinking water.

We therefore request that you submit a monitoring well plan specifying the type, number, and location of the wells, the parameters to be measured, and the frequency of monitoring. This plan can utilize both existing and proposed wells. The plan will become part of the permit application for both of Rouge Steel's injection wells.

If you have any questions regarding your permit applications please contact Michael Gentleman at (312) 886-1507 or Walter Nied at (312) 886-4237.

Sincerely yours,

Gregory L. Parker, Chief
UIC Section

cc: Thomas Jones, GSS

5WD-12:M.Gentleman:jt:4-30-85

W.F.N.
4-30-85
m.b.
4-30-85
GLP 5/1/85

February 1, 1985

Herbert I. Weinberg
Vice-President
Engineering and Facilities
Rouge Steel Company
3001 Miller Road
Dearborn, Michigan 48121

Dear Mr. Weinberg:

We have reviewed your Underground Injection Control permit application for Waste Disposal Wells #2 (MI-163-1W-0002) and #3 (MI-163-1W-0001). Attached is a list of the additional information needed to complete the applications. Please provide this information to us by March 1, 1985 so that we can continue with the remainder of the permit process.

The financial statement that you submitted has been evaluated and approved as evidence of financial responsibility. It is considered to be sufficient to provide coverage for both the #2 and #3 wells.

Enclosed is a copy of our field inspector's report on the plugging of well #1 that you requested. If you have any questions regarding your permit applications please contact Mr. Michael Gentleman of my staff at (312) 886-1507. If a meeting seems appropriate to discuss the details required to process the permit, contact Mr. Gentleman or Mr. Walter Nied (312) 886-4237.

Sincerely yours,

Gregory L. Parker
Chief, UIC Section
Enclosure

cc: Martyn Turner, GSS
bcc: Stuart Nieman

M.G. 2-7-85
JN. 2-7-85

The following additional information is requested to complete Rouge Steel's permit applications for Disposal Wells #2 (MI-163-1W-0002) and #3 (MI-163-1W-0001).

- Attachment H- Please submit a recent analysis of the chemical, physical radiological, and biological, characteristics of the injection fluids. This analysis should be performed by an independent laboratory. In addition please include manufacturers specifications of the corrosion resistance of the tubular goods which will come in contact with the injection fluids. This information should include specifications for both wells.
- Attachment I- Please submit complete results of any injectivity tests performed on Well #2.
- Attachment K- Please submit manufacturers specifications for the injection pump on the #3 well.
- Attachment L- Please submit copies of all logs from well #2, analyzed by a qualified consultant with all formation tops marked.
- Attachment O- Outline plans to cope with the failure of either well.
- Attachment Q- Please submit enclosed Plugging and Abandonment Plans (EPA Form 7520-14) for both wells signed by an official signatory.

5WD-12:M.GENTLEMAN:jt:2-5-85

5WD-12

January 16, 1985

Roy T. Lewis
Project Engineer
Rouge Steel Company
3001 Miller Road
P.O. Box 1631
Dearborn, Michigan 48121-1631

Re: Notification - Receipt of Application
UIC Permit #MI-163-1W-0001 and #MI-163-1W-0002

Dear Mr. Lewis:

We have tentatively assigned Underground Injection Control (UIC) permit numbers MI-163-1W-0001 and MI-163-1W-0002 to your wells Disposal Well #3 and Disposal Well #2, respectively. Please refer to these numbers in all future correspondence with our office. We may, as we progress through the permit completeness process, need to request additional information to clarify, modify, or supplement previously submitted material. In order to expedite permit processing, we ask that you respond quickly to these requests.

Please inform us if any material you have sent us to date and any material you may send us in the future is confidential per 40 CFR 2.

Feel free to write or call Mr. Walter Neid ((312)886-4237) or Mr. Michael Gentleman ((312)886-1507) if you have any questions.

Sincerely Yours,

John C. Taylor, Acting Chief
Underground Injection Control Section

5WD-12:J.Bleem:st:1-7-85

B 1/17/85 JBT 1/18/85

2MD-JS

NOV 16 1984

5WD-12

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Thomas Weber
Rouge Steel Company
3001 Miller Road
Dearborn, Michigan 48121

RE: Underground Injection Wells
Safe Drinking Water Act
Plugging & Abandonment Requirements

Dear Mr. Weber:

The Underground Injection Control (UIC) program was established under the authority of Part C of the Safe Drinking Water Act (42 U.S.C. 300f et seq.), with the objective of protecting the Nation's underground sources of drinking water.

From our records and files, I believe your injection facility to be a Class IV hazardous waste injection well. Final regulations for these wells require closure prior to December 25, 1984, in accordance with 40 CFR Part 144.13.

This Agency has not received a plan from you to plug and abandon the Class IV well injection as required by 40 CFR Part 144.23. The owner or operator of this well must submit for approval the plan for closure by December 1, 1984. Failure to submit this plan by the required date will be considered noncompliance and subject to escalated enforcement action.

Should you have any questions about the UIC program or the requirements specific to your well, please contact Mr. John Taylor, Acting Chief, UIC Section, at (312) 886-1502.

Sincerely yours,

/s/ original signed by
Valdas V. Adamkus

Valdas V. Adamkus
Regional Administrator

5WD-12:S. Sylvester:st:10-31-84

**ROUGE STEEL COMPANY
DEARBORN, MICHIGAN
UIC PERMIT APPLICATION &
TECHNICAL REPORT FOR
CLASS I COKE OVEN WASTE
DISPOSAL WELL NO. 2**

**PREPARED BY:
D. MILLER
T. WEBER
SUBMITTED:
DECEMBER 1984**

Form 4 UIC	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY UNDERGROUND INJECTION CONTROL PERMIT APPLICATION (Collected under the authority of the Safe Drinking Water Act, Sections 1421, 1422, 40 CFR 144)	I. EPA ID NUMBER <table border="1"> <tr> <td></td> <td>T/A</td> <td>C</td> </tr> <tr> <td>U</td> <td></td> <td></td> </tr> </table>		T/A	C	U		
	T/A	C						
U								

**READ ATTACHED INSTRUCTIONS BEFORE STARTING
FOR OFFICIAL USE ONLY**

Applicant approved mo day year	Date Received mo day year	Permit/Well Number	Comments
		MI-163-1W-0002	

II. FACILITY NAME AND ADDRESS		III. OWNER/OPERATOR AND ADDRESS	
Facility Name ROUGE MANUFACTURING COMPLEX		Owner/Operator Name ROUGE STEEL COMPANY	
Street Address 3001 MILLER ROAD- RM. 2307		Street Address 3001 MILLER ROAD	
City DEARBORN	State MI	ZIP Code 48121	City DEARBORN
			State MI
			ZIP Code 48121

IV. OWNERSHIP STATUS (Mark 'x')	V. SIC CODES
<input type="checkbox"/> A. Federal <input type="checkbox"/> B. State <input checked="" type="checkbox"/> C. Private <input type="checkbox"/> D. Public <input type="checkbox"/> E. Other (Explain)	3312

VI. WELL STATUS (Mark 'x')	
<input checked="" type="checkbox"/> A. Operating Date Started mo day year 8 27 76	<input type="checkbox"/> B. Modification/Conversion <input type="checkbox"/> C. Proposed


VII. TYPE OF PERMIT REQUESTED (Mark 'x' and specify if required)			
<input checked="" type="checkbox"/> A. Individual <input type="checkbox"/> B. Area	Number of Existing wells 1	Number of Proposed wells	Name(s) of field(s) or project(s)

VIII. CLASS AND TYPE OF WELL (see reverse)			
A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code "x," explain	D. Number of wells per type (if area permit)
1	W		

IX. LOCATION OF WELLS; OR APPROXIMATE CENTER OF FIELD OR PROJECT												X. INDIAN LANDS (Mark 'x')		
C. A. Latitude		B. Longitude		Township and Range								<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
I	Deg	Min	Sec	Deg	Min	Sec	Trap	Range	Sec	1/4 Sec	Feet from	Line	Feet from	Line
	42	18	07	83	08	38	25	11	28	NW	1420	S	190	E

XI. ATTACHMENTS	
(Complete the following questions on a separate sheet(s) and number accordingly; see instructions) FOR CLASSES I, II, III (and other classes) complete and submit on separate sheet(s) Attachments A — U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.	

XII. CERTIFICATION	
I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)	

A. Name and Title (Type or Print)		B. Phone No. (Area Code and No.)
Herbert I. Weinberg, Vice President, Engineering & Facilities		(313) 337-1532
C. Signature		D. Date Signed
		12/3/84

Form 4 UIC	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY UNDERGROUND INJECTION CONTROL PERMIT APPLICATION <i>(Collected under the authority of the Safe Drinking Water Act, Sections 1421, 1422, 40 CFR 144)</i>										I. EPA ID NUMBER <div style="border: 1px solid black; height: 20px; width: 100%;"></div>			
	READ ATTACHED INSTRUCTIONS BEFORE STARTING FOR OFFICIAL USE ONLY										T/A <div style="border: 1px solid black; height: 20px; width: 100%;"></div>			
	U										C <div style="border: 1px solid black; height: 20px; width: 100%;"></div>			

Applicant approved	Date Received	Permit/Well Number	Comments
mo day year	mo day year		
<div style="border: 1px solid black; height: 20px; width: 100%;"></div>	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>

II. FACILITY NAME AND ADDRESS				III. OWNER/OPERATOR AND ADDRESS			
Facility Name ROUGE MANUFACTURING COMPLEX				Owner/Operator Name ROUGE STEEL COMPANY			
Street Address 3001 MILLER ROAD-RM. 2307				Street Address 3001 MILLER ROAD			
City DEARBORN		State MI	ZIP Code 48121	City DEARBORN		State MI	ZIP Code 48121

IV. OWNERSHIP STATUS (Mark 'x')				V. SIC CODES			
<input type="checkbox"/> A. Federal <input type="checkbox"/> B. State <input checked="" type="checkbox"/> C. Private <input type="checkbox"/> D. Public <input type="checkbox"/> E. Other (Explain)				3312			

VI. WELL STATUS (Mark 'x')			
<input checked="" type="checkbox"/> A. Operating <div style="border: 1px solid black; padding: 2px;"> Date Started mo day year 8 27 76 </div>		<input type="checkbox"/> B. Modification/Conversion <input type="checkbox"/> C. Proposed	

VII. TYPE OF PERMIT REQUESTED (Mark 'x' and specify if required)			
<input checked="" type="checkbox"/> A. Individual <input type="checkbox"/> B. Area		Number of Existing wells 1	Number of Proposed wells
Name(s) of field(s) or project(s)			

VIII. CLASS AND TYPE OF WELL (see reverse)			
A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code "x," explain	D. Number of wells per type (if area permit)
1	W		

IX. LOCATION OF WELL(S) OR APPROXIMATE CENTER OF FIELD OR PROJECT										X. INDIAN LANDS (Mark 'x')					
A. Latitude		B. Longitude		Township and Range											
Deg	Min	Sec	Deg	Min	Sec	Twp	Range	Sec	1/4 Sec	Feet from	Line	Feet from	Line		
42	18	07	83	08	38	25	11	28	NW	1420	S	190	E		
														<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

XI. ATTACHMENTS
 (Complete the following questions on a separate sheet(s) and number accordingly; see instructions)
 FOR CLASSES I, II, III (and other classes) complete and submit on separate sheet(s) Attachments A — U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application:

XII. CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print)	B. Phone No. (Area Code and No.)
C. Signature	D. Date Signed

PRINT OR TYPE INFORMATION. SEE INSTRUCTION SHEET R 7500-1 BEFORE FILLING OUT APPLICATION.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

APPLICATION FOR A MINERAL WELL PERMIT

To Drill, Operate, Convert, or Rework
a Brine, Storage, Disposal, or Test Well

By Authority of Act 315, P. A. 1969

1. DATE OF APPLICATION June 30, 1975	2. FEE ENCLOSED 30.00
3. APPLICATION TO Drill New Deep Well	
4. TYPE MINERAL WELL Waste Disposal	5. WELL DESIGNATION D-2
6. LOCATION: Hypothetical (Private Claim 28) SE 1/4 of the NW 1/4 of the SW 1/4 SEC. 28 T25 N 11E	
7. TOWNSHIP City of Dearborn	8. COUNTY Wayne

9. APPLICANT Ford Motor Co.		10. TELEPHONE 323-1480
11. ADDRESS (Street, City, State) 3001 Miller Rd., Dearborn, Mich.		12. ZIP CODE 48121
13. SURETY OR SECURITY COMPANY Home Assurance Co., N.Y., N.Y.	14. TYPE <input type="checkbox"/> SINGLE <input checked="" type="checkbox"/> BLANKET	15. AMOUNT 25000.00
16. BOND NO. 01-11-65	17. OWNER OR SURFACE RIGHTS Ford Motor Co.	
18. OWNER OR MINERAL RIGHTS Ford Motor Co.	19. DRILLING CONTRACTOR	
20. ADDRESS		21. TELEPHONE
22. TYPE DRILLING TOOLS <input type="checkbox"/> CABLE <input checked="" type="checkbox"/> ROTARY <input type="checkbox"/> COMBINATION	23. FORMATION Mt. Simon	24. INTENDED DEPTH 1200 ft.
25. PROJECT ENGINEER OR GEOLOGIST J. Robbins	26. ADDRESS 3001 Miller Road, Dearborn Mi. 48121	27. TELEPHONE 32-22583

28. PROGRAM OF DRILLING, CONVERTING, REWORKING, CASING, CEMENTING, COMPLETING, OPERATING, AND MONITORING.
(See appropriate instruction sheet. Attach 2 copies of proposed program — including but not necessarily limited to information requested in the instruction sheet.)

ING PROGRAM:
Size Depth Cement

See attached sheet
titled Drilling Program

INSTRUCTION SHEET NO.		
Type of Well	Drill-New	Rework *
Brine	D-1	R-1
Storage	D-2	R-1
Disposal	D-3	R-1
Solution Mining	D-4	R-2
Test Well	D-5	R-1
*Rework, Deepen, or Convert to New Use.		

THERE WILL BE NO CHANGES IN THE PROGRAM OUTLINED IN THIS APPLICATION WITHOUT APPROVAL OF THE SUPERVISOR OF MINERAL WELLS OR HIS AUTHORIZED REPRESENTATIVE.

29. ADDRESS CORRESPONDENCE AND PERMIT TO: R. Chaiken, 3001 Miller Rd., Dearborn, Mich. 48121	30. TELEPHONE 323-1480
--	----------------------------------

MINERAL WELL SECTION USE ONLY

STATUS OF BOND \$3,000 Effective July 7, 1975
APPLICATION APPROVED BY R. Chaiken
PEP NUMBER 184-754-882
ISSUED 7-21-75
ISSUED BY AMR

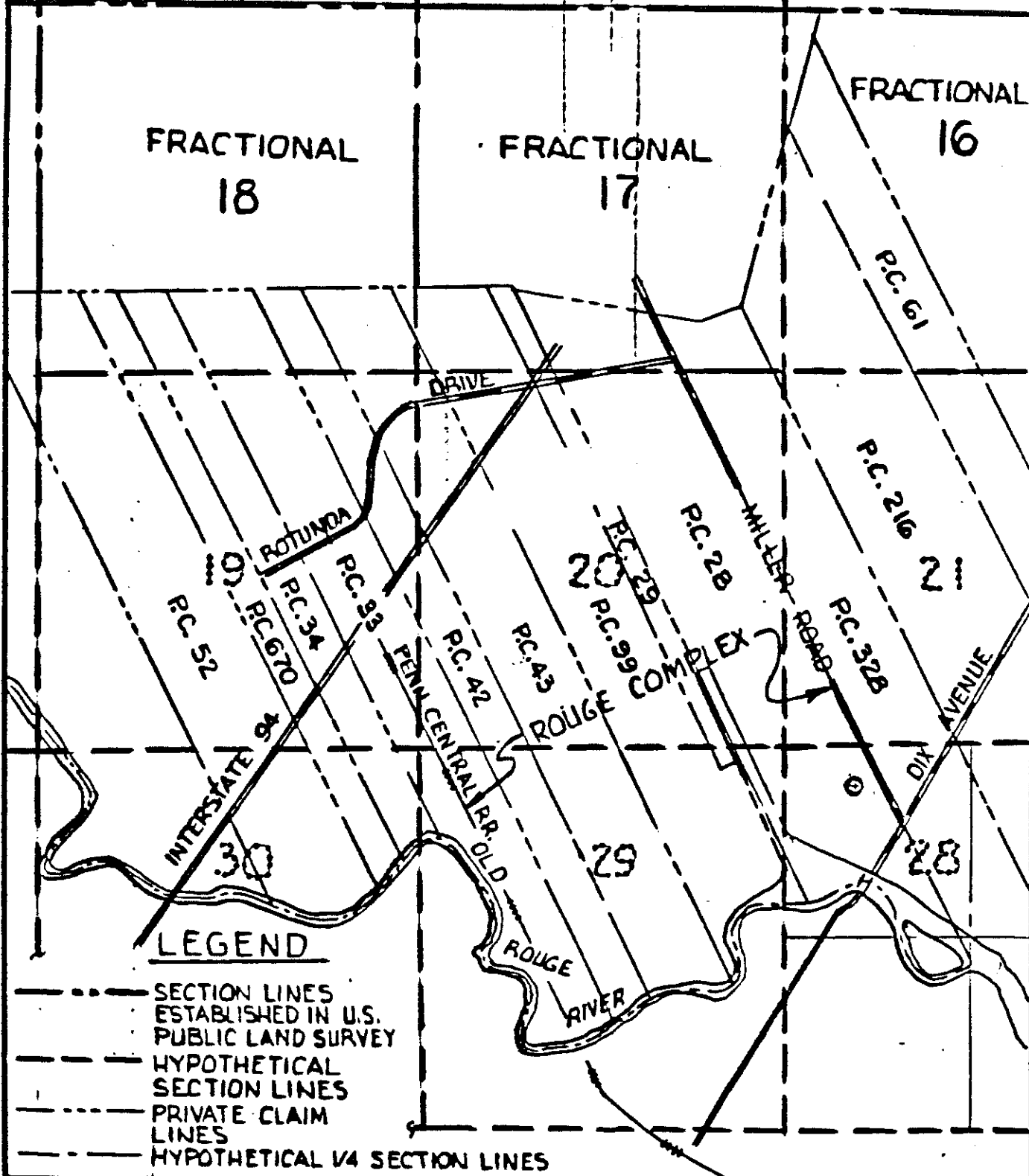
DISTRIBUTION:
White — Lansing
Canary — Field
Pink — Applicant

The Applicant agrees to comply with provisions and requirements of Act 315, P.A. 1969, and asserts that the information on this application and attached report is true and correct.

SIGNATURE (APPLICANT/AUTHORIZED REP.) R. Chaiken	DATE 6/30/75
NAME (TYPED)	
TITLE Facilities Modernization and Planning Manager	
FOR CASHIER'S USE ONLY	

R 7500 2/73

NOTE: OLD ROUGE RIVER IS RELOCATED, BUT PRIVATE CLAIMS EXTEND TO CENTERLINE OF OLD RIVER BED
 MAP DATA ACQUIRED FROM U.S.G.S. DEARBORN 7.5' QUADRANGLE MAP



ISSUED FOR		BY	DATE	ASSIGNMENT NO.
PROJECT NO.				
Ford Motor Company PLANT ENGINEERING OFFICE				
TITLE		SCALE 1:2400	CHK'D. BY	DRAWING NO.
IN HYPOTHETICAL SECTION , TOWN 2 SOUTH, RANGE 11 EAST		DES. BY	APP'D. BY	84-P2
CITY OF DEARBORN, WAYNE COUNTY, MICH.		DR. BY N. USAW	DATE 5.9.84	SHT. NO. C-1
PLANT ROUGE COMPLEX				

PLT. ENG. 8108
 EP. 08
 DEC 1984

Drilling Program

The Contractor will drill the disposal well by setting approximately 10' of 20" conductor pipe, then drill a 17-1/2" hole to approximately 125', run and cement 13-3/8" casing, then drill a 12-1/4" hole to approximately 600', run and cement the 9-5/8" casing, the 9-5/8" casing will be cemented by using 2 stages, a 9-5/8" stage packer collar and a 9-5/8" guide shoe, three 9-5/8" centralizers, then drill a 7-7/8" hole to approximately 3,900', then core from approximately 3,900' to approximately 4,200', or to a depth necessary to test the Mt. Simons Sand, run and cement 5-1/2" casing at a depth recommended by the geologist by using a 5-1/2" stage tool, a 5-1/2" guide shoe, 12 centralizers and cementing to the surface. He will install the casing hangers and wellhead equipment. He will run electric logs, caliper log and bond logs on the 9-5/8" and 5-1/2" casing. Drill stem tests before setting the 5-1/2" casing.

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES
GEOLOGICAL SURVEY DIVISION

SURVEY RECORD OF MINERAL WELL LOCATION

(Submit in duplicate with Application for a Mineral Well Permit 'R 7500')

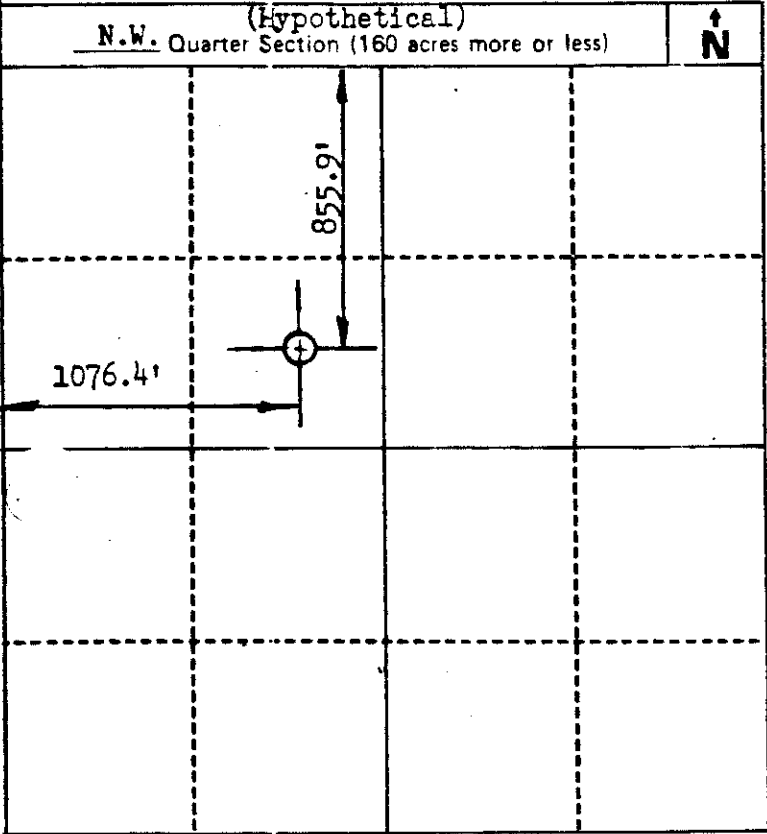
OPERATOR Ford Motor Co.																			
WELL NAME Coke Oven Final Cooler Waste Water Well	WELL NUMBER 2																		
LOCATION: S.E. 1/4 of the N.W. 1/4 of the N.W. 1/4 X SECTION 28 (Hypothetical) T. 2S R. 11E																			
TOWNSHIP City of Dearborn	COUNTY Wayne County																		
<div style="display: flex; align-items: center;"><div style="flex: 1;"><p>(Hypothetical) N.W. Quarter Section (160 acres more or less)</p></div><div style="flex: 1; padding-left: 10px;"><p>1. Locate well site and outline property on plat.</p><p>2. Locate well in two directions from nearest quarter section lines and from nearest ownership property lines.</p><p>855.9 ft. from North line of Quarter Section. (N-S)</p><p>1076.4 ft. from West line of Quarter Section. (E-W)</p><p>1420 ft. from South lease or property line. (N-S)</p><p>190 ft. from East lease or property line. (E-W)</p><p>3. Is location staked? <u>Yes</u> If location is not staked, describe how it is identified.</p><p>4. Tell how it can be reached or show access route on plat. <u>Plant Roads in Rouge Mfg. Complex</u></p><div style="display: flex; justify-content: space-between;"><div>5. Acreage in Property 892</div><div>6. Ground Elevation 587.14</div></div></div></div> <tr><td colspan="2">(Scale of Plat: 1 inch equals 660 feet)</td></tr> <tr><td colspan="2">7. Type of Land and Cover (open farm land, grass, brush, timber, etc.) Industrial Property</td></tr> <tr><td colspan="2">8. Are any roads, power lines, buried transmission lines, regularly used buildings, etc., within 300 feet of well site? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If yes, locate on survey plat, show distance from site, and give brief description.</td></tr> <tr><td>NAME OF INDIVIDUAL WHO SURVEYED SITE A. E. Scala</td><td>DATE 5/9/75</td></tr> <tr><td colspan="2">TITLE Chief Civil Engineer</td></tr> <tr><td colspan="2">ADDRESS The American Road, Dearborn, Mich. 48121</td></tr> <tr><td colspan="2">CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.</td></tr> <tr><td>SIGNATURE (Authorized Representative) A. B. Houston</td><td>DATE June 29-75</td></tr> <tr><td colspan="2">ADDRESS (If Different than above) 1 Parklane Blvd. Dearborn Mich 48126</td></tr>		(Scale of Plat: 1 inch equals 660 feet)		7. Type of Land and Cover (open farm land, grass, brush, timber, etc.) Industrial Property		8. Are any roads, power lines, buried transmission lines, regularly used buildings, etc., within 300 feet of well site? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO If yes, locate on survey plat, show distance from site, and give brief description.		NAME OF INDIVIDUAL WHO SURVEYED SITE A. E. Scala	DATE 5/9/75	TITLE Chief Civil Engineer		ADDRESS The American Road, Dearborn, Mich. 48121		CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.		SIGNATURE (Authorized Representative) A. B. Houston	DATE June 29-75	ADDRESS (If Different than above) 1 Parklane Blvd. Dearborn Mich 48126	
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**MICHIGAN
PERMIT APPLICATION CHECKLIST
FOR CLASS I WELLS**

Applicant Rouge Steel Company

Application # _____

Date _____

A. Area of Review Section 1.4

- | | |
|--------------------|--|
| <u>Table 6.0-1</u> | 1. Permeability of disposal zone. |
| <u>Table 6.0-1</u> | 2. Net thickness of disposal zone. |
| <u>Table 6.0-1</u> | 3. Original bottom hole pressure. |
| <u>Section 4.6</u> | 4. Static water level of drinking water aquifer. |
| <u>Table 6.0-1</u> | 5. Porosity. |
| <u>Table 6.0-1</u> | 6. Specific gravity of fluid in injection zone. |

B. Maps of Wells and Area of Review (all from public records)

- | | |
|-------------------------|---|
| <u>Section 10.0</u> | 1. Producing wells. |
| <u>Secs. 9.0 - 10.0</u> | 2. Abandoned wells and dry holes. |
| <u>Section 4.5</u> | 3. Water wells. |
| <u>Figure 4.0-1</u> | 4. Road, residences, lakes, mines and quarries. |
| <u>Section 5.3</u> | 5. Faults. |

C. Corrective Action Plan and Well Data

- | | |
|--------------------|---|
| <u>Section 9.2</u> | 1. Corrective action plan for unplugged wells which penetrate injection zone. |
| <u>Table 9.0-1</u> | 2. Tabulation of all wells penetrating zone with: |
| <u>Table 9.0-1</u> | (a) well construction data |
| <u>Table 9.0-1</u> | (b) operator |
| <u>Table 9.0-1</u> | (c) cementing data |
| <u>Table 9.0-1</u> | (d) distance |

- Table 9.0-1 (e) date drilled
- Table 9.0-1 (f) depth
- Table 9.0-1 (g) plugging records

D. Maps and Cross Sections of USDW's

- Section 4.6 1. A piezometric map of the water table.
- Sec. 4.6 &
- Figure 5.0-13 2. Maps and cross sections of USDW's.

E. Does Not Apply to Class I Wells

F. Maps and Cross Sections of Geologic Structure of Area

- Sec. 5.2 & 1. Regional geology:
 - Figure 5.0-6 (a) surface geology
 - Figure 5.0-5 (b) cross sections
 - Figs. 5.0-10, 11 (c) structural contour map
- 2. Local geology:
 - Figure 5.0-13 (a) two perpendicular cross sections
 - Section 5.2 (b) description of upper and lower confining strata (lithology, permeability, etc.)
 - Section 5.3 (c) description of faulting in area
 - Secs. 5.1 - 5.5 (d) depositional, structural, and tectonic history of the area
 - Figs. 5.0-10, 11 (e) structural contour map of injection zone
 - Figs. 5.0-8, 9 (f) isopach map of injection zone
- 3. Geohydrology - reservoir mechanics of injection zone:
 - Sections 6.0 & 7.0
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 - Table 6.0-1 (b) geologic name
 - Table 6.0-1 (c) porosity
 - Table 6.0-1 (d) permeability
 - Table 6.0-1 (e) temperature
 - Table 6.0-1 (f) reservoir pressure

Section 5.3 (g) faulting, fracturing, solution channels

Section 7.5 (h) fracture gradient

Section 6.4 (i) piezometric surface map

G. Does Not Apply To Class I Wells

H. Operating Data

Table 7.0-4 1. Average and maximum injection rates (daily) and volume.

Table 7.0-4 2. Average and maximum injection pressure.

Section 2.0 3. Source and analysis of waste:

Section 2.0 (a) physical

Section 2.0 (b) chemical

Section 2.0 (c) biological

Section 2.0 (d) radiological

Section 2.0 4. Compatibility tests.

Section 2.0 5. Corrosion tests.

Table 7.0-4 6. Average and maximum rate of injection.

I. Formation Testing Program

Section 6.3 1. Collection and analysis of formation fluid.

Section 8.8 2. Cores and core testing.

Section 8.10 3. Injectivity testing.

J. Stimulation Program

Section 8.9 1. Fracturing.

Section 8.9 2. Acidizing.

Section 8.9 3. Other.

K. Injection Procedures

Section 2.0 1. Filter types and location in system.

 2. Injection pumps (type and capacity).

 3. Plant plat with flow line.

-
- 4. Tank size, capacity, and construction material.
 - 5. Description of pretreatment process and facilities.
-

L. Construction Procedures

Sec. 8.5 &
Table 8.0-1

- 1. Total depth.

Sec. 8.5 &
Table 8.0-1

- 2. Type completion.

Sec. 8.5 &
Table 8.0-1

- 3. Surface casing:

Sec. 8.5 &
Table 8.0-1

- (a) size

Sec. 8.5 &
Table 8.0-1

- (b) type

Sec. 8.5 &
Table 8.0-1

- (c) weight

Sec. 8.5 &
Table 8.0-1

- (d) setting depth

Sec. 8.5 &
Table 8.0-1

- (e) number and location of centralizers, well scratchers, etc.

Sec. 8.5 &
Table 8.0-1

- 4. Intermediate casing:

Sec. 8.5 &
Table 8.0-1

- (a) size

Sec. 8.5 &
Table 8.0-1

- (b) type

Sec. 8.5 &
Table 8.0-1

- (c) weight

Sec. 8.5 &
Table 8.0-1

- (d) setting depth

Sec. 8.5 &
Table 8.0-1

- (e) number and location of centralizers, wall scratchers, etc.

Sec. 8.5 &
Table 8.0-1

- 5. Long string casing:

Sec. 8.5 &
Table 8.0-1

- (a) size

Sec. 8.5 &
Table 8.0-1

- (b) type

Sec. 8.5 &
Table 8.0-1

- (c) weight

Sec. 8.5 &
Table 8.0-1

- (d) setting depth

Sec. 8.5 &
Table 8.0-1

- (e) number and location of centralizers, wall scratchers, etc.

Sec. 8.5 &
Table 8.0-1

- 6. Liner or other casing:

Sec. 8.5 &
Table 8.0-1

- (a) size

Sec. 8.5 &
Table 8.0-1

- (b) type

Sec. 8.5 &
Table 8.0-1

Sec. 8.5 &
Table 8.0-1

Section 8.4

Section 8.4

Section 8.4

Section 8.4

Section 8.4

Section 8.4

Section 8.4

Section 8.4

Section 8.4

Section 8.4

Section 8.4

Section 8.4

Section 8.4

Section 8.4

Section 8.4

Section 8.4

Section 8.6

Section 8.6

Section 8.6

Section 8.6

Section 8.6

Section 8.7

Section 8.7

Section 8.7

(c) weight

(d) setting depth

7. Logging program:

(a) surface (open) hole

spontaneous potential

resistivity

caliper

(b) after surface casing installed

cement bond, temperature or density log (circle one)

(c) before installation of intermediate and long string casing

spontaneous potential

resistivity

porosity log

gamma ray log

directional or inclination survey

fracture finder log

(d) after casing installed

cement bond, temperature, or density

8. Cementing data:

(a) surface casing

type cement

volume

cementing technique and equipment

9. Tubing:

(a) size

(b) type

Section 8.7 (c) setting depth

Section 8.7 10. Packer:

Section 8.7 (a) type

Section 8.7 (b) setting depth

M. Construction Details (engineering drawings)

Figure 8.0-1 1. Well construction.

Figure 8.0-1 2. Wellhead.

N. Does Not Apply To Class I Wells

O. Plans For Well Failures

P. Monitoring Program

Secs. 8.11, 12 1. Frequent analysis of waste.

Secs. 8.11, 12 2. Recorders for:

Secs. 8.11, 12 (a) injection pressure

Secs. 8.11, 12 (b) injection rate and volume

Secs. 8.11, 12 (c) annulus pressure

Secs. 8.11, 12 3. Mechanical integrity testing.

Secs. 8.11, 12 4. Monitoring wells.

Q. Plugging And Abandonment Plan

Section 11.0 1. Plugs:

Section 11.0 (a) type

Section 11.0 (b) location

Section 11.0 2. Cement:

Section 11.0 (a) type

Section 11.0 (b) grade

Section 11.0 (c) quantity

Section 11.0 3. Placement:

Section 11.0 (a) method

Section 11.0

(b) static equilibrium

R. Necessary Resources

Attachment Certificate of necessary resources for plugging well.

S. Aquifer Exemptions

N/A 1. Does not serve as a source of drinking water.

N/A 2. Will not serve as a source of drinking water.

N/A 3. Between 3,000 and 10,000 mg lb TDS.

T. Existing EPA Permits

 1. NPDES.

 2. PSD.

 3. RCRA.

 4. Other.

U. Description of Business

Rouge Steel Company is a fully integrated steel making facility.

1.0 INTRODUCTION

Rouge Steel Company (RSC) is making application to the United States Environmental Protection Agency (US EPA) Underground Injection Control (UIC) Division and the Michigan Department of Natural Resources (MDNR) Mineral Well Division to permit one (1) present Class I injection well located at their facility in Dearborn, Michigan called herein either as Ford Disposal Well #2 or alternately as Rouge Steel Co. Disposal Well #2. This permit application and technical report have been prepared to comply with the US EPA UIC program.

1.1 PERMIT OBJECTIVE

A technical report was prepared to provide supporting data and answer specific questions for Federal regulatory requirements. The primary objective of the report is listed below and later described in further detail.

- Obtain a Class I waste disposal well permit for an injection well located at the RSC facility by fulfilling the US EPA UIC permitting requirements under the Federal Safe Drinking Water Act and 40CFR144 and 40CFR146.

1.2 OBTAIN UIC PERMITS

All information necessary to obtain UIC permitting for well No. 2 is included within the following major topics:

1.2 OBTAIN UIC PERMITS (Continued)

- Wastestream Information and Surface Facilities
- Wastestream Justification
- Hydrology
- Geology
- Reservoir Properties
- Injection Well Operations
- Well Construction and Completion
- Artificial Penetrations
- Oil and Gas Resources
- Plugging and Abandonment

A complete permit application form for the injection well is attached at the beginning of this report. The technical report follows the procedures and guidelines established under the US EPA UIC program and contains all the required geological and engineering data necessary for permitting.

1.3 LOCATION

Rouge Steel Company is located in Wayne County, Michigan as seen in Figure 1.0-1. Specifically, the RSC plant is located within Township 2 South and Range 11 East. The waste disposal well is located in Section 28 of Township 2 South and Range 11 East as illustrated in Figure 1.0-2.

(Source: Modified after Bricker
et al., 1983)

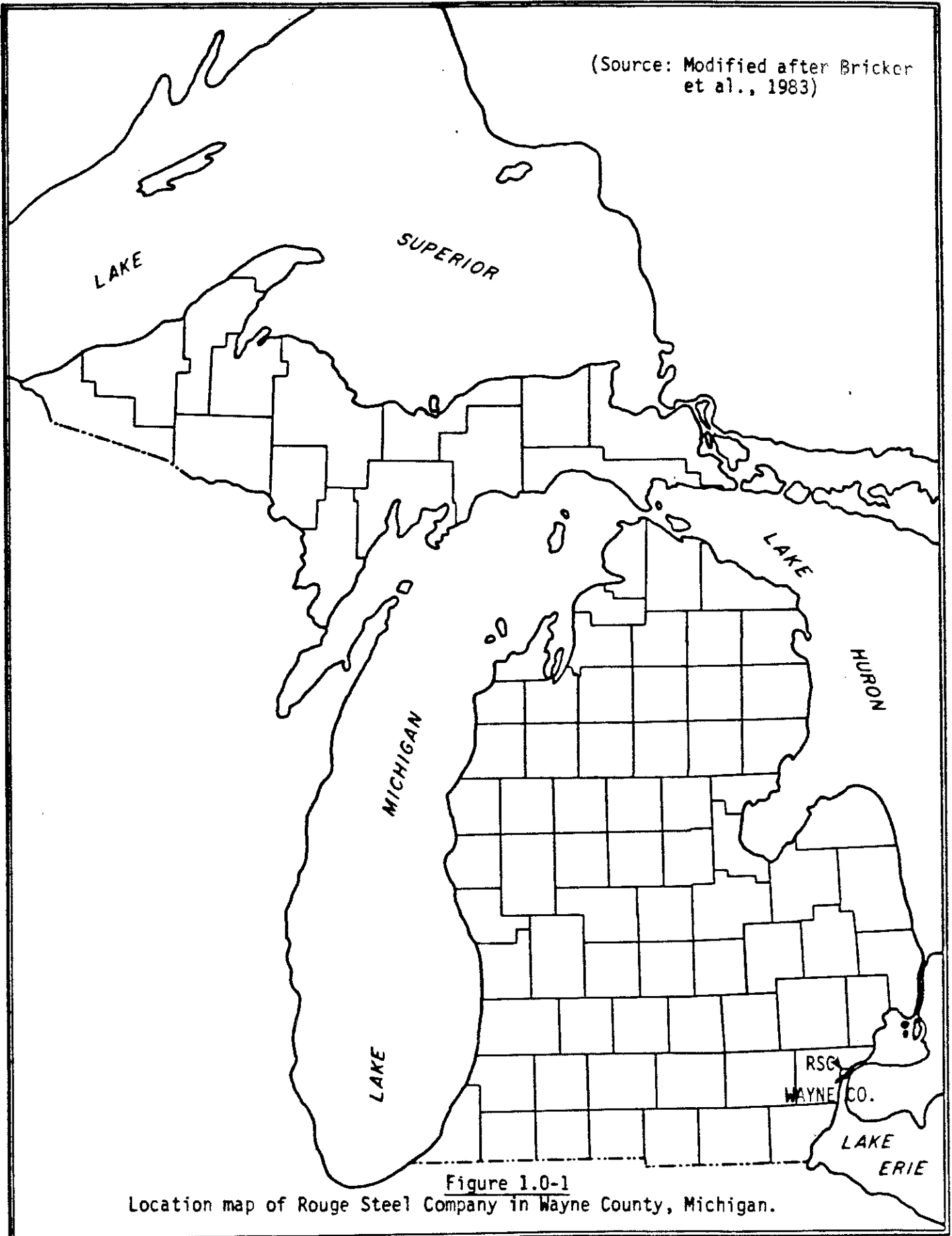
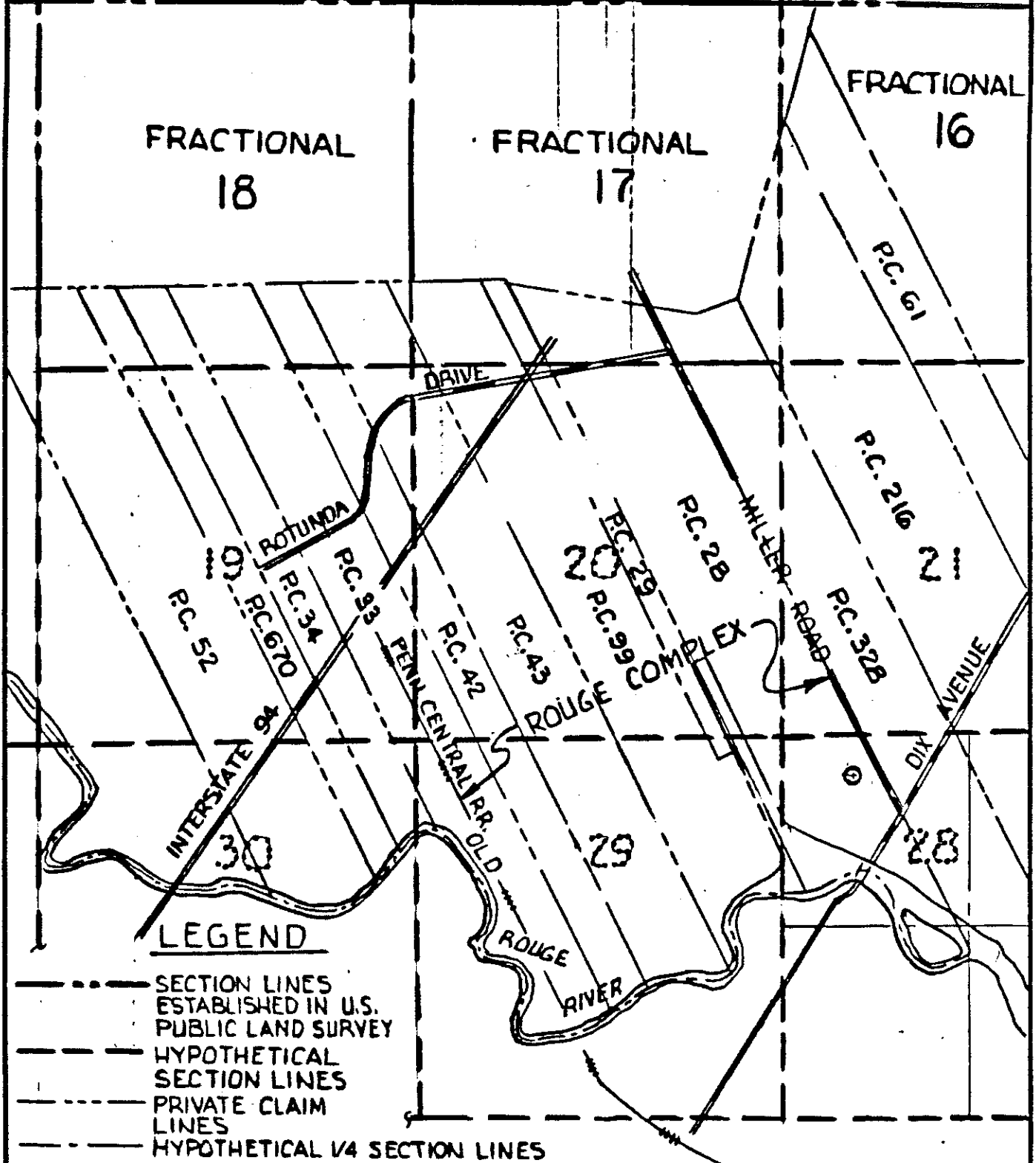


Figure 1.0-1

Location map of Rouge Steel Company in Wayne County, Michigan.

NOTE: OLD ROUGE RIVER IS RELOCATED, BUT PRIVATE CLAIMS EXTEND TO CENTERLINE OF OLD RIVER BED
 MAP DATA ACQUIRED FROM U.S.G.S. DEARBORN 7.5' QUADRANGLE MAP



ISSUED FOR	BY	DATE	ASSIGNMENT NO.
			PROJECT NO.

Ford Motor Company PLANT ENGINEERING OFFICE

TITLE SECTION 30, TOWN 2 SOUTH, RANGE 11 EAST CITY OF DEARBORN, WAYNE COUNTY, MICH.	SCALE 1:2400		CHK'D. BY	DRAWING NO. B4-P2
	DES. BY		APP'D. BY	
PLANT ROUGE COMPLEX	DATE 5-9-84		SMT NO. C-1	

1.4 AREA OF REVIEW

The fixed radius method was utilized in establishing the area of review for the technical report. A fixed radius of one (1) mile was used to fulfill the following UIC requirements:

- Water Well Investigation.
- Oil, Gas and Injection Well Investigation.
- Geological Investigation.
- United States Geological Survey (USGS) 7 1/2' Series Topographic Map.

2.0 WASTESTREAM INFORMATION AND SURFACE FACILITIES

2.1 GENERAL

2.1.1 By-product coking Coking is the process of the destructive distillation of coal. Bituminous coal is charged into a retort (coke oven) and heated for a period of approximately 17½ hours. The coal has been transformed into a solid porous mass (coke).

In the meanwhile volatile gases have evolved from the coal and collected. These gases contain coal tar, light oils (benzene, toluene, xylene, etc.) ammonia and coke oven gas all of which are economically recovered.

The waste by-products from this plant include water which has been used to cool the coke oven gas, an excess of which occurs due to moisture in and on the coal charged to the coke ovens. This water is contaminated with cyanide, phenolics, ammonia and traces of light oils which causes this material to be classified as a hazardous waste. Formerly, this waste was discharged to the Rouge River but since 1956 was injected into Ford Disposal Well #1 into the Sylvania stratum. Since 1976 the material has been injected into Ford Disposal Well #2 into the Eau Claire stratum (the well is drilled into the Mt. Simon Member of the Munising formation).

It is for Ford Disposal Well #2 that this application is currently being made.



CENTRAL LABORATORY SERVICES
GENERAL SERVICES
LABORATORY INVESTIGATION REPORT

NUMBER 503989

TO: T. G. Weber

9-8-75

SUBJECT: Waste Water

OBJECT: Analyze as per request.

TEST DATA:

Total solids at 100°C, %	0.53
Volatile solids at 600°C, %	99.8
Total cyanide as CN, ppm	over 130
Oxidizable cyanide as CN, ppm	over 130
Un Oxidizable cyanide as CN, ppm	0.18
Phenol, ppm as C ₆ H ₅ OH	52.1
(Minimum Phenol conc. read as C ₆ H ₅ OH)	
Ammonia as N, ppm	440
pH	8.6
Chloride as Cl, ppm	Zero
Sulfates as SO ₄ , ppm	1002
Total alkalinity as CaCO ₃ , ppm	1740
Total hardness, ppm	Zero
Bicarbonate hardness, ppm	Zero
Carbonate hardness, ppm	Zero
Dissolved iron as Fe, ppm	0.98
Total iron as Fe, ppm	1.23
Oil as ppm	11.5
BOD, ppm	72
Calcium as Ca, ppm	0.5
Specific gravity at room temperature	1.0023
Viscosity at room temperature, centipoise	1.18

*also keep rechecked
this value incorrect
should be 718 - 4/16/75
Rechecked in case man
has 500*

C. J. Boryski, Manager
Chemical Department

Concur:

D.J. Pangonis
D.J. Pangonis, Supervisor

Tested by

AK Manjil
A. Manjil

TABLE 2.0-2



CENTRAL LABORATORY SERVICES

GENERAL SERVICES

LABORATORY INVESTIGATION REPORT

NUMBER 600529

TO: T. G. Weber

3/31/76

SUBJECT: Connate Water and Coke Oven Effluent Water.

OBJECT: Perform requested analyses for information.

TEST DATA:

Suspended Solids, ppm

Bottle #1 (Connate Water)

100% Connate Water

1st Run

102

2nd Run

301

80% Effluent/20% Connate

1st Run

277

2nd Run

285

Bottle #2 (Connate Water)

100% Connate Water

1st Run

362

2nd Run

1046

80% Effluent/20% Connate

1st Run

334

2nd Run

403

Analysis of Suspended Solids

(Emission Spectrographic Analysis)

	<u>100% Connate</u>	<u>80% Effluent/ 20% Connate</u>	<u>100% Effluent</u>
Silicon as SiO ₂ , %	1.3	4.0	1.2
Iron as Fe ₂ O ₃ , %	4.0	10.0	4.0
Aluminum as Al ₂ O ₃ , %	0.4	1.0	1.0
Calcium as CaO, %	23.0	20.0	10.0
Magnesium as MgO, %	0.3	0.8	1.0
Sodium as Na ₂ O, %	0.8	2.0	0.6
Phosphorus as P ₂ O ₅ , %	0.02	1.5	0.2
Lead as PbO, %	0.02	0.1	0.01

Analysts: S. Block and B. Karpelis

S. Block

D. J. Pangonis
 D. J. Pangonis, Supervisor
 Chemical Department

C. J. Boryski, Manager
 Chemical Department

DJP/em

TABLE 2.0 - 3



CENTRAL LABORATORY SERVICES

GENERAL SERVICES

LABORATORY INVESTIGATION REPORT

Org. #6089

NUMBER 600530

TO: T. G. Weber

3/31/76

SUBJECT: Water (Composite of Bottle #1 and #2)

OBJECT: Perform requested analyses for information.

SAMPLES

RECEIVED: #1 - 80% Effluent/20% Connate
 #2 - 100% Connate
 #3 - 100% Connate
 #4 - 80% Effluent/20% Connate

TEST DATA: A.M.S. Analyses

Particle Size and Distribution

Size Range (Microns)	% Distribution			
	#1	#2	#3	#4
1.0 - 3.0	23.4	33.9	22.4	43.2
3.1 - 5.0	32.0	31.4	33.8	29.8
5.1 - 7.5	22.6	19.1	20.1	15.3
7.6 - 10.0	10.6	7.4	9.6	6.5
10.1 - 15.0	7.0	5.5	7.2	3.9
15.1 - 25.0	3.4	2.5	5.0	1.2
25.1 - 50.0	1.0	0.2	1.9	0.1

By S. Block
 S. Block

Concurred: D. J. Pangonis
 D. J. Pangonis, Supervisor
 Chemical Department

C. J. Boryski, Manager
 Chemical Department

DJF/em

16011.2

TABLE 2.0-4

New Deep Well Project - Compatability Test

Data

Mixture of 80% coke oven final cooler effluent and 20% connate water.

Chemical	<u>%</u>	Physical Size range (u)	<u>%</u>
Si O ₂	4.0	1.0 - 3.0	33.3
Fe ₂ O ₃	10.0	3.1 - 5.0	30.9
Al ₂ O ₃	1.0	5.1 - 7.5	19.0
Ca O	20.0	7.6 - 10.0	8.6
MgO	.8	10.1 - 15.0	5.5
Na ₂ O	2.0	15.1 - 25.0	2.3
P ₂ O ₅	1.5	25.1 - 50.0	.6
PbO	.1		
MnO	.2		
K ₂ O	.1		

Connate water in above mixture

Chemical	<u>%</u>	Physical Size range (u)	<u>%</u>
Si O ₂	1.3	1.0 - 3.0	28.2
Fe ₂ O ₃	4.0	3.1 - 5.0	32.6
Al ₂ O ₃	.4	5.1 - 7.5	19.6
Ca O	23.0	7.6 - 10.0	8.5
Mg O	.3	10.1 - 15.0	6.4
Na ₂ O	.8	15.1 - 25.0	3.8
P ₂ O ₅	.02	25.1 - 50.0	1.1
PbO	.02		
MnO	.01		
K ₂ O	.03		

Loss on ignition @ 1000°F - 20%
@ 1800°F - 6.9%

Effluent water filtered through 5u prior to mixing, connate water unfiltered.

Source: Ford Motor Company, Rouge Gate 4 Laboratories

2.2 PROCESS

The by-product coking process referred to in 2.1.1 above by necessity includes the collection and processing of the coke oven gas which is evolved during the coking process.

Also, during the coking cycle water is given off, which was initially present either on the surface or within the coal charged as inherent moisture. This by-product water is also collected in the form of so-called ammonia liquor and is processed in bubble cap stills for recovery of the ammonia. The still bottoms from this operation is discharged to the municipal sanitary sewer. The ammonia is recovered in the acid scrubbing process under vacuum. This vacuum has been produced by means of a barometric condenser. The water from this condenser is also contaminated and is also discharged to the municipal sanitary sewer.

The gas is also scrubbed with a mineral oil after cooling for recovery of the coke oven light oils (benzene, toluene, xylene). The recovery is accomplished in a bubble cap still. The water from the light oil recovery plant is also discharged to the municipal sanitary sewer.

Prior to the light oil absorption process the gas is cooled for recovery of the contained naphthalene. The gas is cooled by means of water sprays in towers packed with wooden hurdles, the water being constantly cooled in a closed system and recirculated. However, the process generates excess water which accumulates in the system at this point. The water becomes highly contaminated with ammonia, cyanide, phenol, etc. which must be disposed of.

2.2 PROCESS (Continued)

Presently, this water is being injected into the subject deep disposal well or its emergency stand-by well, Ford Waste Disposal Well #1. (Ford Waste Disposal Well is to be plugged and abandoned during December, 1984.)

2.3 SURFACE FACILITIES

The injection well disposal system consists of (1) a surface facility for receiving and treating suspended solids and; (2) the waste disposal well for conveying the coke oven final cooler waste water to the Munising disposal zone.

The waste water is taken in a side stream from the coke oven final cooler water circulation system, filtered through (1) a diatomaceous earth precoat filter, (2) 50u cartridge filters, (3) 5u cartridge filters and; (4) a 1u cartridge filter. The waste water is held in a 800 gallon surge tank prior to injection into the disposal well by means of a 10x5x10 Gardner-Denver steam positive displacement pump. All flows are constantly measured. Annulus and wellhead pressures are also constantly recorded.

All disposable materials that come in contact with the coke oven final cooler waste are handled as hazardous wastes.

2.4 COMPATABILITY

Laboratory testing for compatability with the formation water was performed at the time the well was drilled, Tables 2.0-2, 2.0-3 and 2.0-4.

Prior to start of injection a total of 1,000,000 gallons of City of Detroit water was pumped into the formation to provide a buffer zone.

IMP/09/06

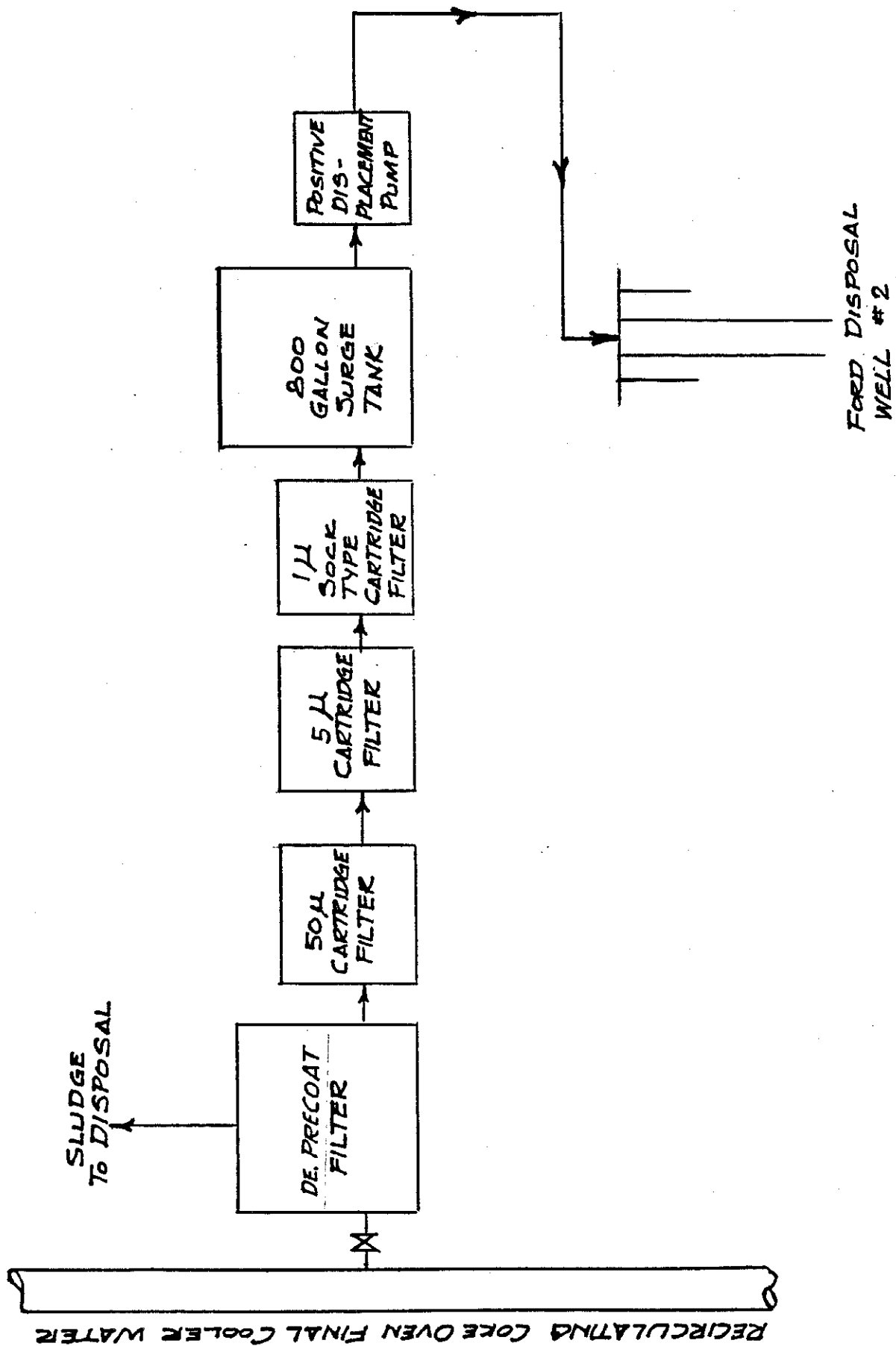


FIGURE 2.0-2

2.4 COMPATABILITY (Continued)

The equipment has proven to be compatible with the coke oven final cooler waste waste with the exception of a hole in the casing of the Ford #1 disposal well which had been in operation since 1956 and had developed a leak at 219 feet in 1972. This casing was subsequently repaired on a rework permit issued by the Michigan Department of Natural Resources in 1973.

2.5 DISPOSAL WELL PERSONNEL QUALIFICATIONS

All new operators are required to attend an operator training course which acquaints the attendees with operations and procedures. The course includes both classroom and field study. On-the-job training is conducted at the process units and includes safety; industrial hygiene; environmental regulations, monitoring, and reporting; hazardous waste procedures; chemistry; fluid flow; instrumentation; unit operations; and mechanical equipment operation and maintenance. Each employee receives training by an experienced operator at the entry-level position, under the supervision of a shift supervisor. Operator Procedures are provided. These procedures cover operation, safety and emergency procedures. In addition to use for initial instruction purposes, these procedures are in a central location for subsequent review by operating and supervisory personnel. In addition to the initial training period safety courses are conducted. Training is also required for all new supervisors. Resume's of company personnel are kept on file at the plant office.

2.6 CONTINGENCY PLAN

In the event of a failure which prevents injection at desired flow rates in disposal well No. 2, the well is shut for necessary corrective maintenance. The total wastestream is disposed of offsite using licensed vendors. A workover plan will be submitted to and approved by the EPA, Region V and the MDNR prior to initiation of workover operations. Once the workover is completed and desired flowrates are obtained, the disposal well will be placed back in operation.

3.0 WASTESTREAM JUSTIFICATION

Underground injection of coke oven final cooler water has been proven as a safe effective disposal technique. Other steel companies utilize Class I waste disposal wells for disposal of coke oven final cooler water generated at their facilities. These wells have been in operation for many years with very few problems.

3.1 ALTERNATE DISPOSAL METHODS

The alternatives currently available for the disposal of coke oven final cooler water are below:

3.1.1 REMOVAL BY LICENSED WASTE HAULERS

This method has been used in the past but is cost prohibitive.

3.1.2 SURFACE STORAGE/EVAPORATION - This disposal method uses natural evaporation in lined ponds; however, the area surrounding the facility is subject to low evaporation rates, possible high rainfall and high relative humidity. To be effective solar evaporation would require a relatively large surface area for the proposed volumes.

Thus, natural evaporation is not considered a viable alternative due to surface area requirements, risks of flooding and unfavorable climate. In addition, Federal/State regulatory agencies discourage the use of any surface impoundment for disposal or storage.

3.1.3 DISCHARGE TO MUNICIPAL SANITARY SERVICE SYSTEM

After treatment through the ammonia stills this method has been used in the past in emergencies. However, new POTW pretreatment regulations would prohibit use of this method.

3.2 DEEP WELL DISPOSAL

Coke oven final cooler water is presently being injected into suitable subsurface aquifers surrounding the plant site. These formations contain water with over 10,000 mg/L total dissolved solids and are bounded by relatively impermeable rock formations which act as natural containment vessels. The primary criteria associated with deep well disposal, is the location of a geologically sound injection formation which minimizes the risk of leaking waste material into potable aquifers. The Munising Formation is an ideal disposal aquifer in that it is porous and permeable yet separated from upper freshwater zones by thick formations of low permeability shale and limestone.

4.2 REGIONAL HYDROLOGY (Continued)

Moraines - are glacial till consisting of a heterogenous mixture of clay, sand and boulders. They originate at the stabilized front of an active glacier forming ridges parallel to the front where large quantities of sediments melt out of the ice and are deposited. The clay content in the morainal sediments determines the aquifer characteristics.

Till Plains - usually form between end moraines. It is characterized by gently rolling areas underlain by till which are commonly referred to as ground moraines. The ground moraines are unsorted, usually resulting in low permeability and moderate porosity; therefore, water yields are low except when local interbedded sand lenses are present.

Lake Plains - are lacustrine (lake bed) deposits of ancestral lakes. Typically, they are low relief deposits consisting of silt with low permeability and porosity. These sediments do not yield large quantities of water except where sand deposits are present.

Outwash Plains - consist of well sorted sands and gravels, with high permeability and porosity. They are deposited by glacial melt waters with the coarser materials being dropped near the ice front and finer materials being dropped away from the ice front. These deposits make excellent aquifers.

4.2 REGIONAL HYDROLOGY (Continued)

Outwash Plains (Continued)

The early Mississippian to early Devonian bedrock units immediately underlying the glacial deposits in the Detroit vicinity consists of several hundred feet of sedimentary sequences deposited in ancient inland seas. These units yield ground water too highly mineralized for most domestic or industrial usage.

4.3 LOCAL HYDROLOGY

Public drinking water is primarily obtained from surface water sources supplied by the Detroit Metro Water Department. The surface water sources of water supply for the Detroit area are Lake St. Clair, Detroit River, Clinton River, River Rouge, Huron River and inland lakes. Surface water is extensively used because it is readily available and local ground water quantities are limited. Figure 4.0-3 illustrates the low availability of ground water in the Detroit area. At the RSC plant all water supplies are purchased and no ground water is produced from glacial deposits (Lake Plain).

A hydrogeological study was conducted for Ford Motor Company's Allen Park Clay Mine Landfill facility which is located near the one mile radius study area. The study provides additional local ground water information.

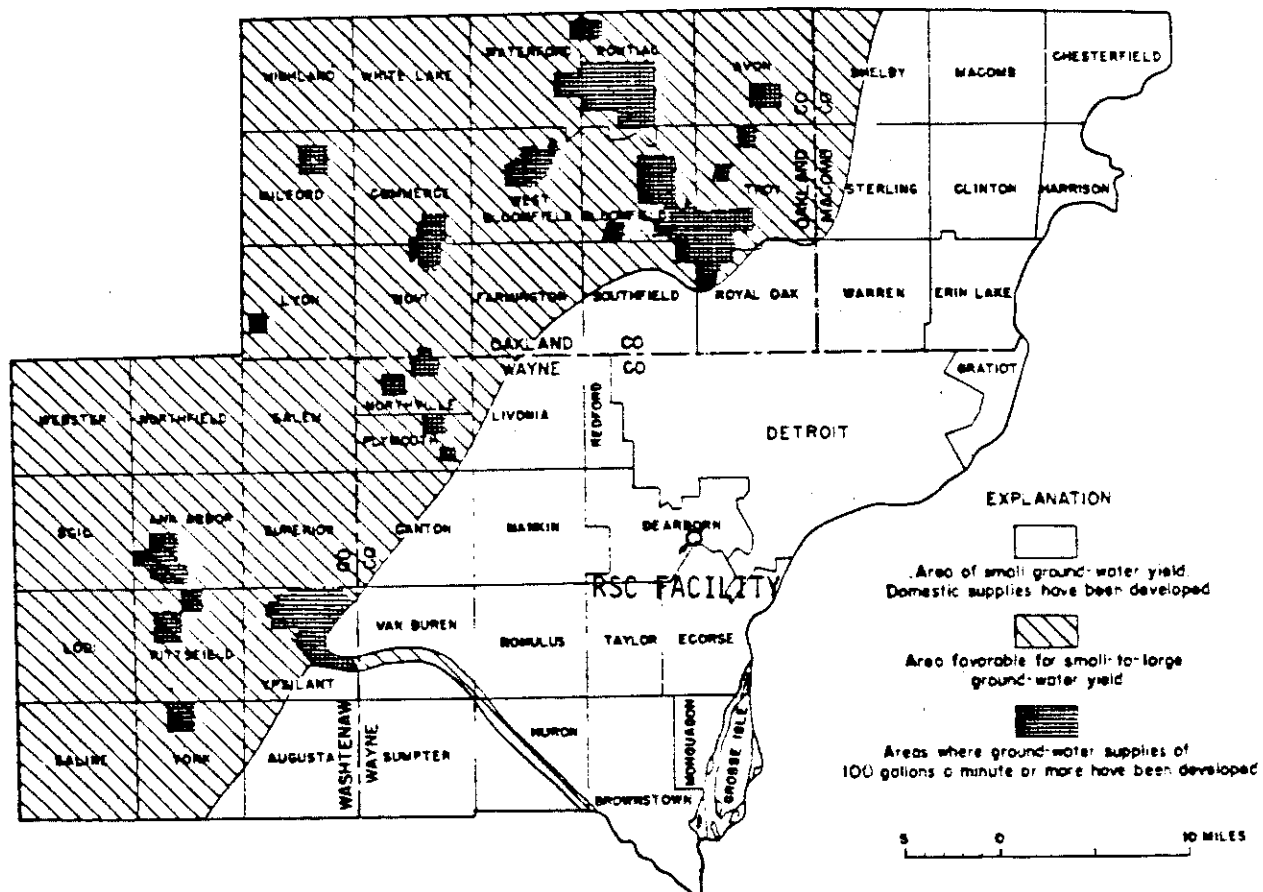


Figure 4.0-3
Ground water availability in the Detroit area.
(Source: Wisler et al., 1952)

4.3 LOCAL HYDROLOGY (Continued)

Shallow and deep glacial aquifer systems are present as determined by monitor wells installed upgradient and downgradient of the landfill site. The Michigan Department of Public Health has established that shallow aquifers that are located less than 25' below the ground surface cannot be used as a drinking water source. This makes the shallow aquifer system unusable.

The deeper aquifer system (70'+ below ground surface) is highly mineralized and would require treatment to be utilized. Additional pertinent information on the monitor wells with local ground water quality and water level information is included as Appendix 4.0-A.

4.4 QUALITY OF GROUND WATER

Chemical analyses of ground water produced from the glacial drift system are shown in Table 4.0-2. Regional water quality has been determined by analysis of water from municipal and industrial wells. Generally, the water in the glacial drift is very hard with a predominance of calcium, magnesium, and bicarbonate ions. However, locally it is chemically acceptable for municipal and industrial supplies. The concentration of total dissolved solids (TDS), in the glacial drift ranges from 378 ppm to 498 ppm. Water quality data from the nearby Allen Park Clay Mine monitor wells is included in Appendix 4.0-A.

[Chemical analyses in parts per million]

	Near Ann Arbor ^{a/}	Pontiac ^{a/}	Birmingham ^{b/}	Berkley ^{b/}	Ypsilanti ^{b/}	Taylor ^{b/} Twp.	Royal Oak ^{a/}
Sample no.	1	2	3	4	5	6	7
Source of water	Glacial drift	Glacial drift	Glacial drift	Glacial drift	Glacial drift	Bedrock	Glacial drift
Date of collection...	Nov. 2, 1951	June 26, 1951	Oct. 1947	Mar. 16, 1944			Aug. 23, 1951
pH value.....	7.5	7.4				6.8	7.6
Specific conductance micromhos at 25°C ..	718	676					789
Silica (SiO ₂).....	13	20	15	13	.8, 8		14
Iron (Fe).....	.05	1.4	1.7	.5	1.5		.35
Calcium (Ca).....	104	80	76	45	111	308	34
Magnesium (Mg).....	35	30	27	27	29	89	20
Sodium (Na).....	7.1	25	37	64	14	276	106
Potassium (K).....	2.3	3.0					3.2
Carbonate (CO ₃).....	0	0					8
Bicarbonate (HCO ₃)..	335	390	395	342	346	808	339
Sulfate (SO ₄).....	132	32	10	5.2	113	730	1.8
Chloride (Cl).....	7.8	22	37	55	17	200	84
Fluoride (F).....	.2	.5		.8			1.0
Nitrate (NO ₃).....	.5	2.5					.2
Dissolved solids.....	491	408	406	378	498	2,240	440
Hardness (as CaCO ₃):							
Total.....	404	324	308	224	397	769	169
Noncarbonate.....	129	3	0	0	113	106	0

^{a/} Analyzed by U. S. Geological Survey.
^{b/} Analyzed by Michigan Department of Health.

Table 4.0-2 Chemical quality of selected ground water in the
 Detroit area.

4.4 QUALITY OF GROUND WATER (Continued)

Underground Source of Drinking Water (USDW) - A USDW is any aquifer which is potentially capable of yielding usable quantities of ground water with a total dissolved solid content (TDS) of less than 10,000 mg/L. The base of fresh water (less than 10,000 mg/L TDS) is approximately located at the base of the Devonian Bedrock units (650'-900'). The Silurian sequences below the Devonian contain interbedded salt/evaporate sequences with water quality which exceeds 10,000 mg/L TDS. The Eau Claire and Mt. Simon, the proposed injection zones are both over 25 times the 10,000 mg/L TDS limitations and are not considered potential USDW.

4.5 INVENTORY OF WATER WELLS

The Detroit area has a very low density of water wells. A thorough search of State of Michigan water wells files for Wayne County revealed only two water wells within a two mile radius of the disposal well.

Pertinent information on these wells is listed below:

Water Well No. 1

Location - Sec. 19, T 2S, R 11E
Depth - 125'
Date Completed - 4/73
Status - Plugged and Abandoned
Depth to Water - Dry Hole
Altitude - 585'

4.5 INVENTORY OF WATER WELLS (Continued)

Water Well No. 2

Location - Sec. 19, T 2S, R 11E

Depth - 112'

Date Completed - Unknown

Status - Unknown

Depth to Water - 5'

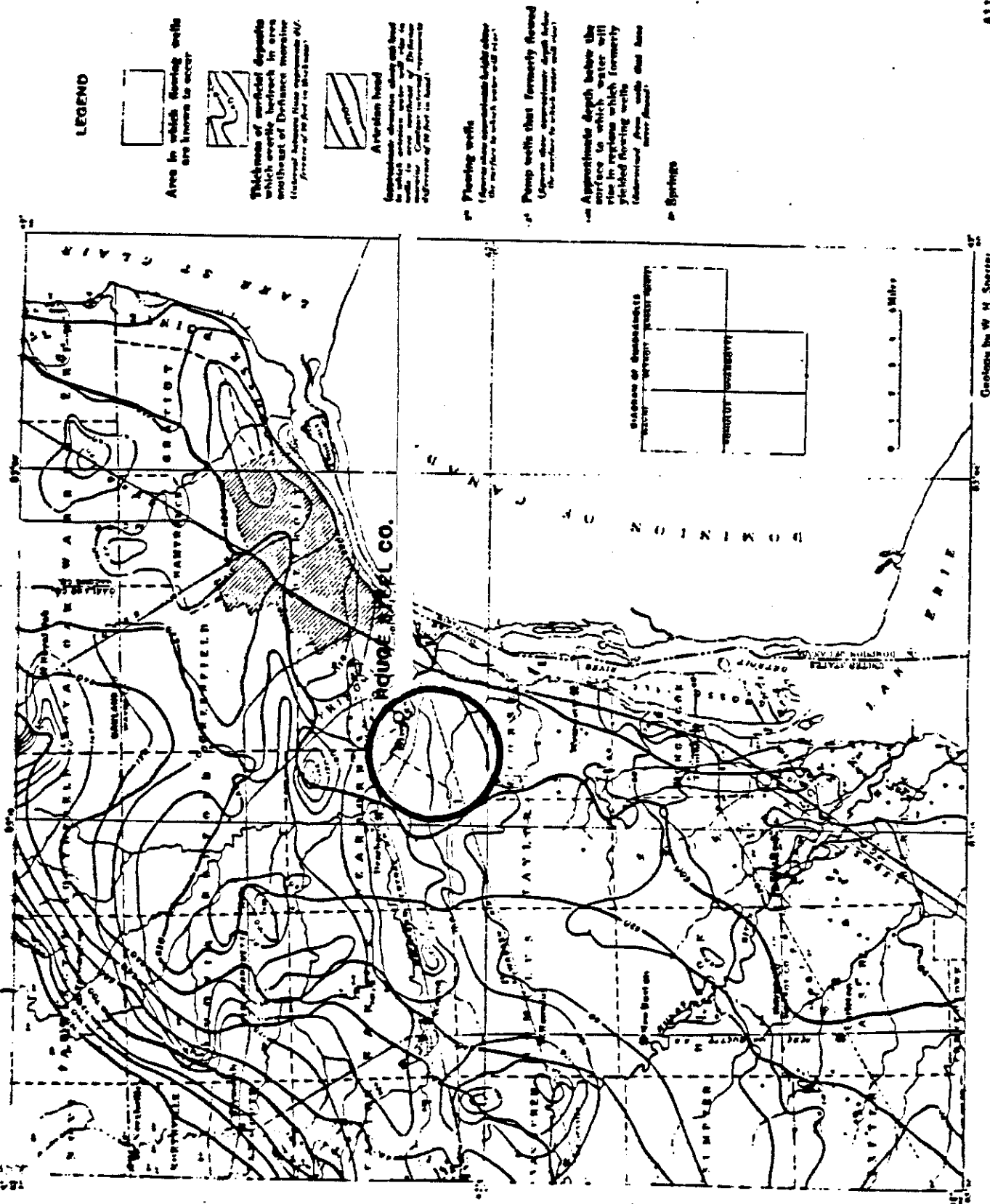
Altitude - 595'

A copy of the record for water well No. 1 is included as Appendix 4.0-A. No records were available for water well No. 2 other than a listing in Twenter, 1975. Records of the nearby Allen Park Clay Mine landfill monitor wells are included as Appendix 4.0-A.

4.6 STATIC WATER LEVEL AND PIEZOMETRIC SURFACE

Local static water level elevations were available from the monitor wells located at the Allen Park Clay Mine disposal landfill. Water level elevations were measured at the monitor wells which penetrate a local glacial artesian aquifer system more than 70' below ground level. The static water levels range from 505' to 522' above mean sea level, reaching a height of up to 12' above the existing ground surface. A piezometric map, Figure 4.0-4 developed by the United States Geological Survey (W.H. Sherzer, 1915) shows water level elevations of the artesian aquifer. It also illustrates the regional trend of ground water flow in this aquifer to the east - southeast.

ARTESIAN WATER



Geology by W. H. Snodgrass

Allen Park Clay Mine
Allen Park, Michigan

Figure 4.0-4

(Sherzer, 1915)

4.7 REFERENCES

Mozola, Andrew J., Geology for Land and Ground Water Development in Wayne County, Michigan, State of Michigan Department of Natural Resources, Report of Investigation No. 3, 1969.

State of Michigan Department of Natural Resources Water Well Files, June 1984.

Twenter, F.R., Ground Water and Geology, Southeastern Michigan Water Resources Study. United States Geological Survey prepared in cooperation with the US Army Corps of Engineers, 1975.

United States Geology Survey, 7.5 minute series, Topographic Map of Dearborn Quadrangle Michigan, Wayne County, 1973.

Western Michigan University, Department of Geology, Hydrology for Underground Injection Control in Michigan Part 1, 1981.

Wisler, C.O. et.al., Water Resources of the Detroit Area, Michigan, USG Circular 183, 1952.

5.0 GEOLOGY

5.1 REGIONAL

Rouge Steel Company's Dearborn plant is located on the southeastern flank of the Michigan Basin as seen in Figure 5.0-1, Major Structural Features in the Great Lakes Region. The Michigan Basin covers an area of approximately 122,000 square miles with its center and deepest part located in the central portion of the Southern Peninsula as shown in Figure 5.0-2, Structure Contour Map of the Precambrian Basement. Figure 5.0-3 is a geologic column illustrating the stratigraphic succession in Michigan. In Michigan's Southern Peninsula, the Michigan Basin includes approximately 13,000'± of consolidated sediments including sandstone, limestone, dolomite, shale and evaporates of Cambrian through Jurassic age. Figure 5.0-4 is a geologic map delineating the bedrock units of Michigan. These sediments lie unconformably upon Precambrian Granite. In southwest Michigan, the structural dip is generally northwest at approximately 103' per mile. Figure 5.0-5 is a regional cross section illustrating the regional stratigraphic relationship of the Munising Formation disposal reservoir and respective confining strata.

Unconsolidated glacial deposits unconformably overlie the consolidated Paleozoic and Mesozoic sediments. These glacial sediments were deposited by ice, wind, and water during the last major ice advance known as the Wisconsin Age of the Pleistocene Epoch.

5.2 LOCAL GEOLOGY STRATIGRAPHY

In the vicinity of the RSC plant, the surficial geologic sediments consist of glacial (Lake Plain) deposits of lacustrine and delta sand; lacustrine clay; and, lacustrine and delta loam as illustrated in Figure 5.0-6. These sediments were deposited during the Wisconsin stage of Pleistocene glaciation. The glacial features are related to the advance and withdrawal of the Erie-Huron ice lobe.

The subsurface geology at the RSC plant is described by using a drillers log (Appendix 5.0-A) and neutron log from Rouge Steel Company, Industrial Waste Disposal Well No. 2, located in Section 28, Township 2 South, Range 11 East, Wayne County, Michigan. Table 5.0-1 lists the depth to the top of the subsurface units. A type log, Figure 5.0-7, indicates the spontaneous potential - resistivity response of the injection formation, the Munising Formation, and its upper and lower confining layers.

PRECAMBRIAN GRANITE 4258'±

The Precambrian Granite forms a non-conformable base upon which the sedimentary strata were deposited and is the oldest unit in the stratigraphic sequence. It is the lower confining layer for the Munising injection interval.

The configuration of the Precambrian granite basement is illustrated in Figure 5.0-2. This structure contour map indicates a really extensive basin located throughout Michigan's Southern Peninsula. At its deepest depth in Arenac, Bay, Midland, and Gladwin Counties, the Precambrian Granite is located at a depth of 14,000'± below mean sea level.

TABLE 5.0-1
FORMATION TOPS, FORD MOTOR COMPANY INDUSTRIAL WASTE DISPOSAL WELL NO. 2

<u>Group</u>	<u>Formation Top</u>	<u>Member</u>	<u>Depth below ground level</u>
	Glacial Drift		0'
	Dundee Limestone		105'
Detroit River	Detroit River		149'
Detroit River	Sylvania Sandstone		478'
	Bois Blanc Formation		594'
Bass Islands	Undifferentiated		639'
Salina	G Unit		875'
Salina	F Evaporite		938'
Salina	E Unit		1245'
Salina	D Evaporite		1343'
Salina	C Unit		1378'
Salina	B Evaporite		1440'
Salina	A-2 Carbonate		1748'
Salina	A-2 Evaporite		1866'
Salina	A-1 Carbonate		1901'
Salina	A-1 Evaporite		1946'
Niagara			1952'
Niagara	Clinton		2228'
Cataract	Cabot Head Shale		2247'
Cataract	Manitoulin Dolomite		2324'
Richmond	Undifferentiated		2380'
Trenton & Black River	Undifferentiated		2966'
Lake Superior	Trempealeau		3868'
Lake Superior	Munising	Eau Claire	3887'
		Mt. Simon	4176'
	Pre-Cambrian		4258'
	Granite		

5.2 LOCAL GEOLOGY STRATIGRAPHY (Continued)

LAKE SUPERIOR GROUP, CAMBRIAN (3849'± - 4258'±)

Munising Formation, (3887'± - 4258'±)

Mt. Simon Sandstone Member (4176'± - 4258'±) - The basal sedimentary rock unit in Michigan's Southern Peninsula is the Mt. Simon Sandstone which occurs only in the subsurface. The Mt. Simon Sandstone serves as the lowermost unit of the Munising disposal reservoir for RSC's Class I waste Disposal Well No. 2.

The thickness of the Mt. Simon Sandstone varies considerably within the Michigan Basin. Figure 5.0-8 is an isopachous map delineating the areal extent and thickness of the Mt. Simon Sandstone. At its thickest point, the Mt. Simon is 1200' thick. At the RSC plant, the thickness of the Mt. Simon Sandstone is approximately 82'±.

The upper portion of the Mt. Simon Sandstone in Rouge Steel Company, Industrial Waste Disposal Well No. 2 is described as poorly sorted, white to translucent, very fine to course grained, round to sub-rounded sandstone. The lower portion of the Mt. Simon Sandstone is described as granite in finely textured red siltstone and is commonly referred to as the granite wash. Typically, the granite wash makes a good injection interval because of increased porosity and permeability.

The Mt. Simon Sandstone is considered well suited as a disposal reservoir because of its wide areal extent, good permeability and a high total dissolved solid content.

5.2 LOCAL GEOLOGY STRATIGRAPHY (Continued)

LAKE SUPERIOR GROUP, CAMBRIAN (3849'± - 4258'±) (Continued)

Munising Formation, (3887'± - 4258'±) (Continued)

Eau Claire Member (3887'± - 4176'±) - The Eau Claire Member conformably overlies the Mt. Simon Sandstone with a transitional contact between the two units. The Eau Claire Member serves as the uppermost unit of the Munising disposal reservoir for RSC's Class I waste Disposal Well No. 2

The thickness of the Eau Claire also varies considerably within the Michigan Basin. Figure 5.0-9 is an isopachous map delineating the areal extent and thickness of the Eau Claire Member within the Munising Formation. At its thickest point, the Eau Claire attains a thickness of 800'±. At the RSC plant, the thickness of the Eau Claire Member is 289'± thick.

The Eau Claire Member consists of course to very fine grained sandstone, dolomite and shale. The Eau Claire Member is well suited as a disposal reservoir because of its wide areal extent, good permeability, thick upper confining layers, and a high total dissolved solid content.

Trempealeau Formation (3868'± - 3887'±)

The Trempealeau Formation unconformably overlies the Eau Claire. The lower portion consists of argillaceous, micaceous dolomite.

5.2 LOCAL GEOLOGY STRATIGRAPHY (Continued)

Trempealeau Formation (3868'± - 3887'±) (Continued)

The upper portion consists of very fine grained well cemented sandstone with glauconite and pyrite. It will serve as the upper confining zone for the injection interval.

TRENTON AND BLACK RIVER GROUPS, UNDIFFERENTIATED, ORDOVICIAN (2966'± - 3849'±) - The Trenton and Black River Groups, undifferentiated, conformably overlies the St. Peter Sandstone. It consists of tan to brown limestone.

RICHMOND GROUP, ORDOVICIAN (2380'± - 2966'±) - The Richmond Group conformably overlies the Trenton and Black River Groups. It consists of gray, red and green shale. It is commonly called the Cincinnati and will serve as an excellent upper confining layer having a net shale thickness of approximately 300'.

CATARACT GROUP, SILURIAN (2247'± - 2380'±) - The Cataract Group conformably overlies the Richmond Group. It consists of gray, red and green shale in the upper portion and tan and gray dolomite in the basal portion.

NIAGARA GROUP, UNDIFFERENTIATED, SILURIAN (1952'± - 2247'±) - The Niagara Group conformably overlies the Cataract Group. The upper portion consists of tan to brown and white to bluish white dolomite. The lower portion consists of green dolomite shale.

5.2 LOCAL GEOLOGY STRATIGRAPHY (Continued)

SALINA GROUP, SILURIAN (875'± - 1952'±) - The Salina Group conformably overlies the Cataract Group. It consists of alternating carbonate, shale and evaporite units.

BASS ISLAND GROUP, SILURIAN (639'± - 875'±) - The Bass Island Group conformably overlies the Salina Group. It consists of buff to pink very fine grain, crystalline dolomite.

BOIS BLANC FORMATION, DEVONIAN (594'± - 639'±) - The Bois Blanc Formation unconformably overlies the Bass Islands Group. It consists of gray to brown cherty dolomite.

DETROIT RIVER GROUP, DEVONIAN (149'± - 594'±) - The Detroit River Group unconformably overlies the Bois Blanc Formation. It contains two members which are the Sylvania Sandstone and the Detroit River dolomite. The Sylvania Sandstone consists of medium grained sand and has been utilized as a disposal reservoir in the Detroit area. The Detroit River dolomite consists of gray, tan to brown dolomite.

DUNDEE LIMESTONE, DEVONIAN (105'± - 149'±) - The Dundee Limestone conformably overlies the Detroit River Group. It consists of white to tan limestone.

GLACIAL DRIFT, PLEISTOCENE (0' - 105'±) - Glacial Drift unconformably overlies the Dundee Formation. It consists of clay, sand and gravel.

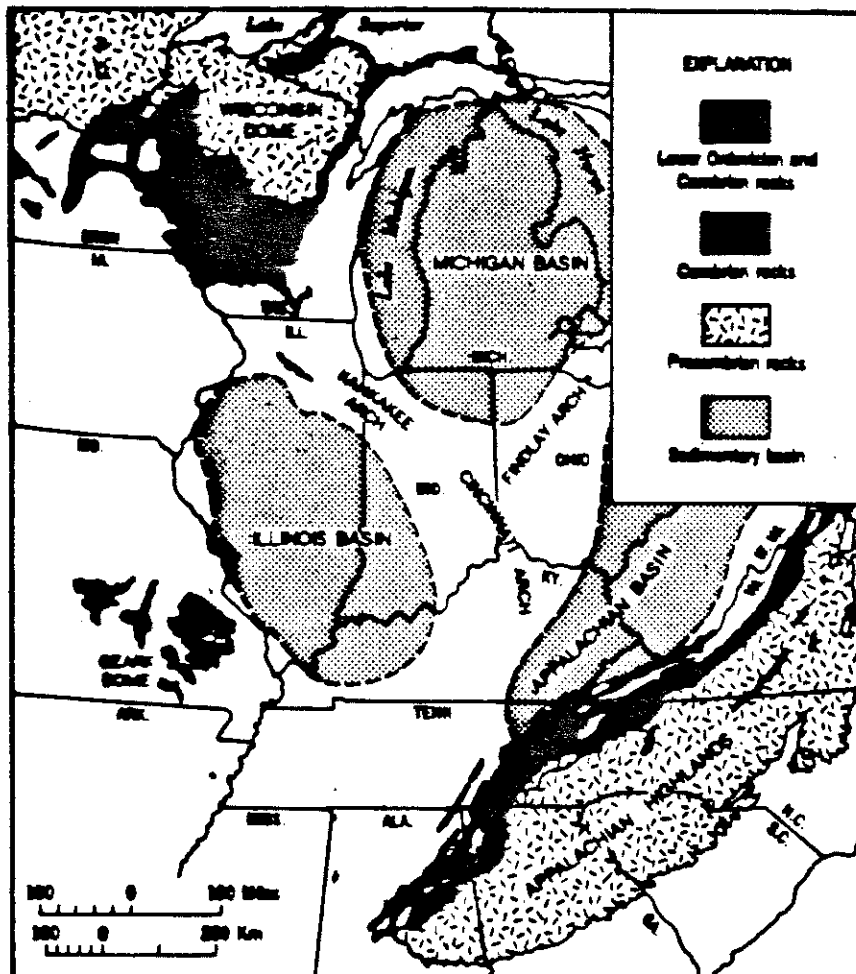


FIGURE 5.0-1. MAJOR STRUCTURAL FEATURES IN THE GREAT LAKES REGION. (SOURCE: BECKER ET AL., 1978.)

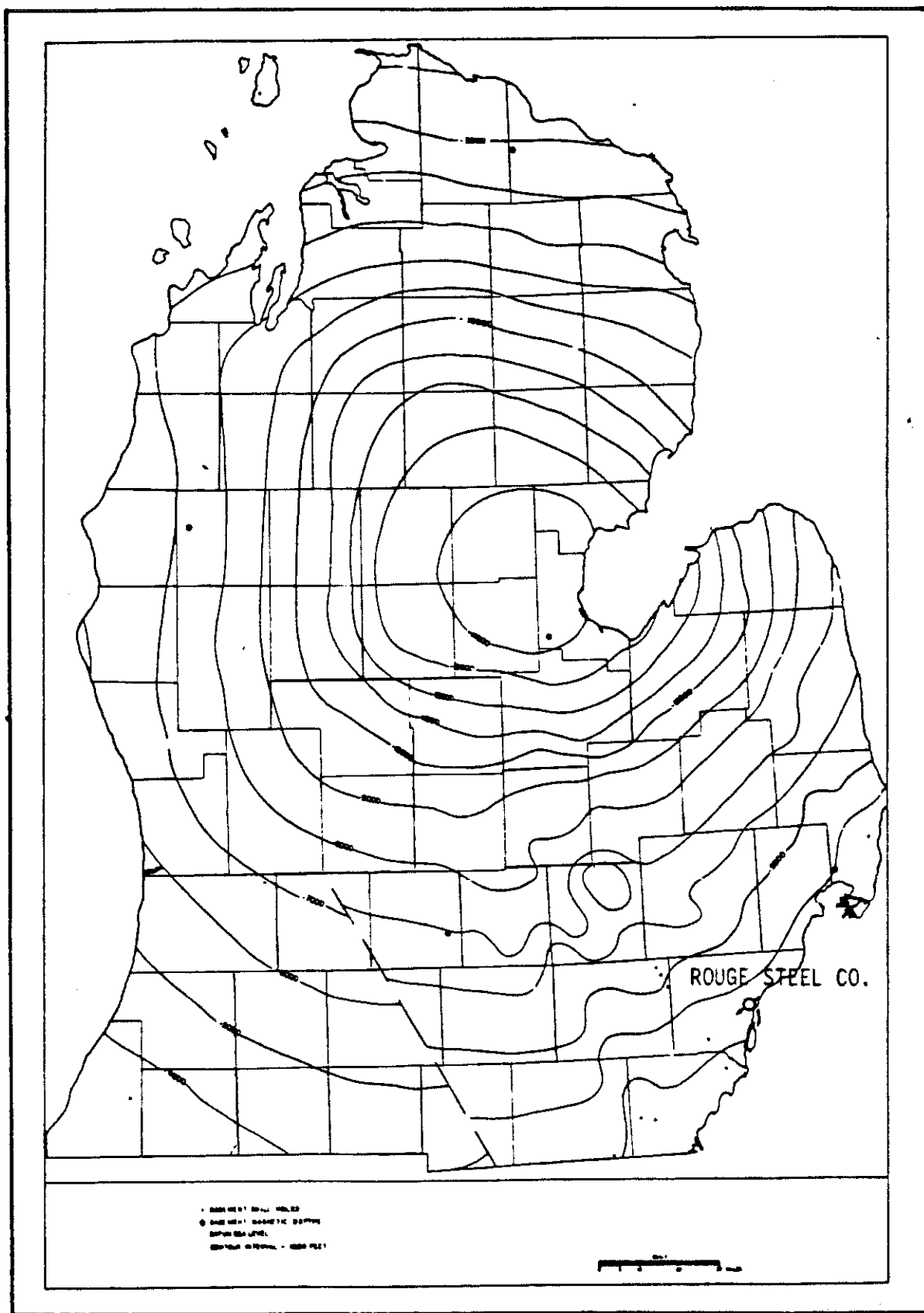


FIGURE 5.0-2. STRUCTURE CONTOUR MAP ON TOP OF THE PRECAMBRIAN BASEMENT IN THE SOUTHERN PENINSULA OF MICHIGAN. (SOURCE: WESTERN MICHIGAN UNIVERSITY, 1981.)



John E. Thompson, State Designer and Chief

[illegible]

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Principles in steel gas ports and closures were used in petroleum engineering and applied to parts of torpedoes or guns in the submarine.

STRATIGRAPHIC POSITION	INFORMA. ITEMS	PAYS
Basal sandstones of Saguenay Fm. _____	None known	
In lower part of Mudgager _____	None seen Gravel lens _____ Sandstone in _____ _____ _____	Can Can Can & ON
Marshall Is. _____	_____	Can & ON
Calabazow Sh. _____	Calabazow lens _____ Calabazow nodules	Can
In upper part of Blanchard Sh. _____	"Blues" (Mudgager, Mudgager) _____	ON & Can
Barnes Is. _____	None seen (Eastern Mudgager) _____	ON & Can
Saguenay Bay, Li. _____	_____	ON & Can
Upper part of Tremblay Group in _____	_____	
Western Mudgager _____	Tremblay lens _____ Tremblay lens _____	ON & Can ON & Can
Rupert City Li. _____	_____	ON & Can
Diamond Li. _____	_____	ON & Can
Diamond Li. ? Upper part of Lucan Fm. ? _____	None kn. seen _____	ON & Can
In Lucan Fm. _____	Gravel lens Big oil lens Gravel nodules Big nodules Gravel lens _____	ON & Can Can Can Can & Can Can & Can
Ambushbury Fm. _____	None kn.	
Part of Saline Group 1 Unit _____	1 seen In Saguenay area _____	ON
Diamonds of A-2 Carletonplace in Western Mudgager _____	A-2 diamonds A-2 lens _____	Can
A-1 Carletonplace _____	A-1 diamonds _____	ON & Can
Upper part of Mudgager Series _____	None known gravel nodules _____	ON & Can
Part of Mudgager Series _____	Gravel lens Eastern Mudgager _____	
Tremblay Group _____	_____	ON & Can
Black River Group _____	Black River lens Black River lens No. 100 lens _____	ON & Can
Onondaga Dal. _____	_____	ON

The figure consists of seven vertical cross-sections labeled (a) through (g), showing the progressive stages of a geological basin's development. Each section includes a legend on its right side.

- (a) Limestone, Clay, Sand:** Shows three distinct horizontal layers. Legend: Limestone (horizontal lines), Clay (dotted pattern), Sand (wavy pattern).
- (b) Limestone, Clay, Sand:** Similar to (a), but with a small fault line appearing at the base of the Sand layer. Legend: Limestone, Clay, Sand.
- (c) Limestone, Clay, Sand:** The Sand layer is thicker, and the fault line is more pronounced. Legend: Limestone, Clay, Sand.
- (d) Limestone, Clay, Sand:** The basin is deeper, and the fault line is significant. Legend: Limestone, Clay, Sand.
- (e) Limestone, Clay, Sand:** The basin is deeper still, and the fault line is very prominent. Legend: Limestone, Clay, Sand.
- (f) Limestone, Clay, Sand:** The basin is deeper, and the fault line is very prominent. Legend: Limestone, Clay, Sand.
- (g) Limestone, Clay, Sand:** The basin is deeper, and the fault line is very prominent. Legend: Limestone, Clay, Sand.

[illegible]

Figure 5.0-3

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

[illegible]

OUTCROF NOMENCLATURE

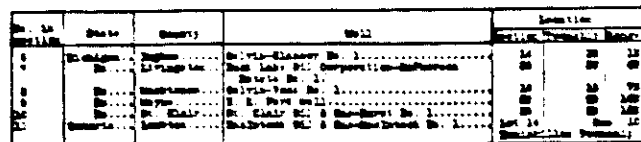
GEOLOGIC TIME		TIME STRATIGRAPHIC		ROCK STRATIGRAPHIC		
ERA	PERIOD	SYSTEM	SERIES	GROUP	FORMATION	MEMBER
	EPOCH					









SUBSURFACE NOMENCLATURE

BOOK STRATIGRAPHIC		
FORMATION	MEMBER	GROUP
Approximate sequence diagram, a list of rock units in the subsurface. See NCAL/		

DOMINANT LITHOLOGY

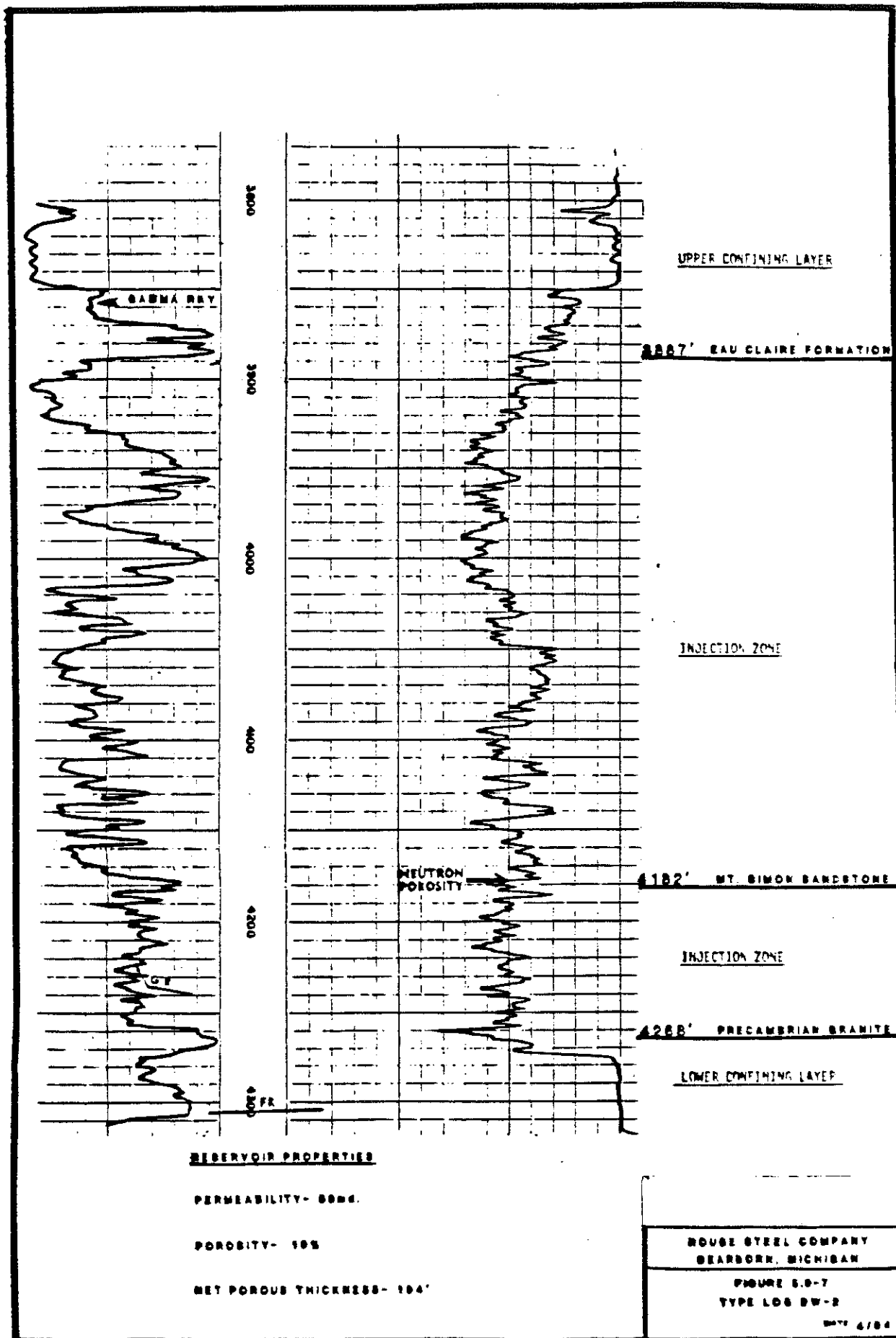
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 DOLOMITES
 SANDSTONE
 SANDSTONE, DOLOMITES
 CHERT
 DOLOMITES, BASALT
 M. MISTONE
 SHALE
 PRE-CAMBRIAN, UNDIFFERENTIATED
 NO SAMPLES

**SOURCE: MODIFIED AFTER
COHEE, 1945.**

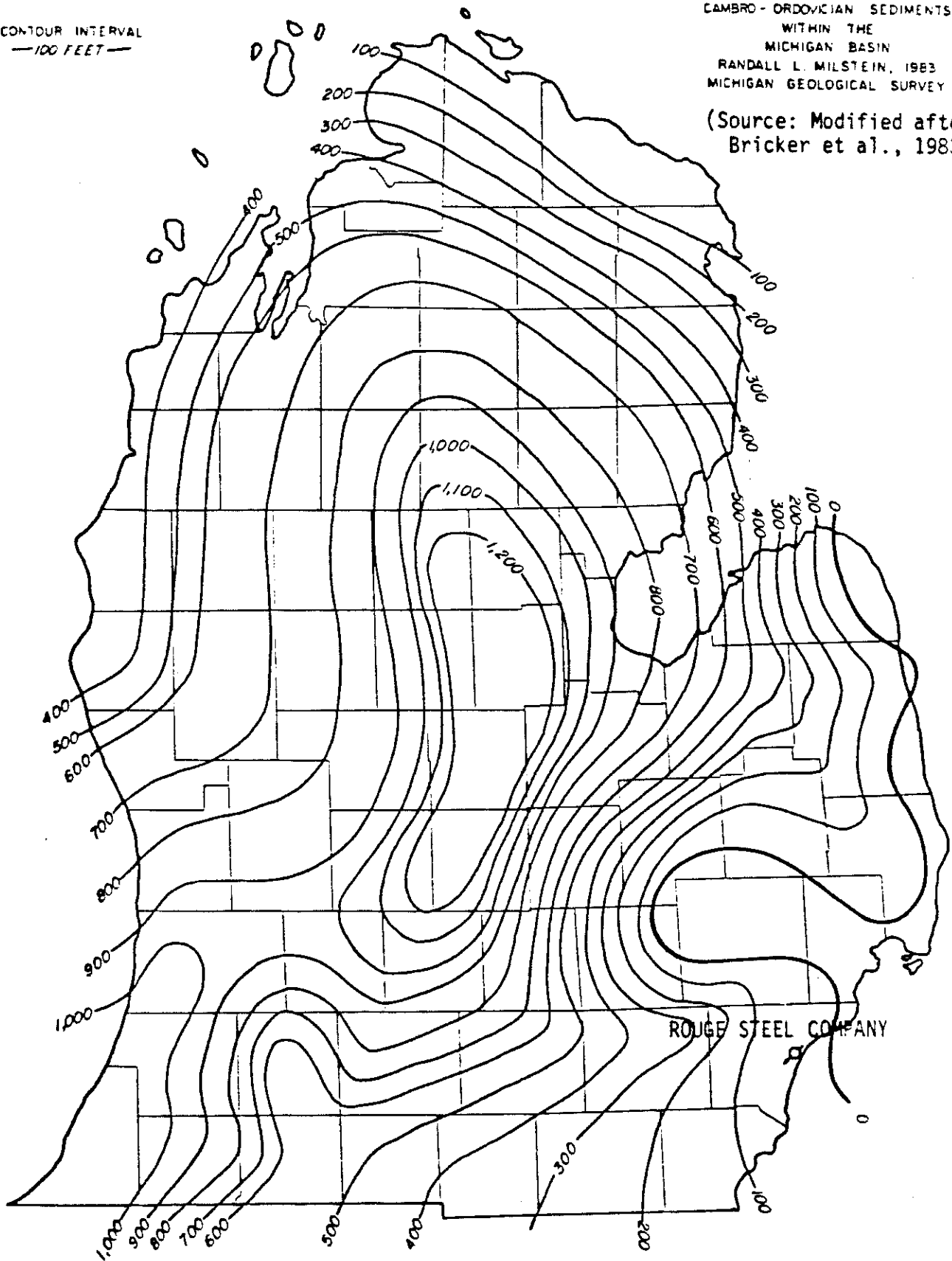
REGIONAL GEOLOGIC CROSS SECTION



SELECTED STUDIES
OF
CAMBRO-ORDOVICIAN SEDIMENTS
WITHIN THE
MICHIGAN BASIN
RANDALL L. MILSTEIN, 1983
MICHIGAN GEOLOGICAL SURVEY

(Source: Modified after
Bricker et al., 1983)

CONTOUR INTERVAL
—100 FEET—



MT. SIMON ISOPACH MAP
Figure 5.0-8

CONTOUR INTERVAL
—100 FEET—

SELECTED STUDIES
OF
CAMBRO-ORDOVICIAN SEDIMENTS
WITHIN THE
MICHIGAN BASIN
RANDALL L. MILSTEIN, 1983
MICHIGAN GEOLOGICAL SURVEY

(Source: Bricker et al., 1983)

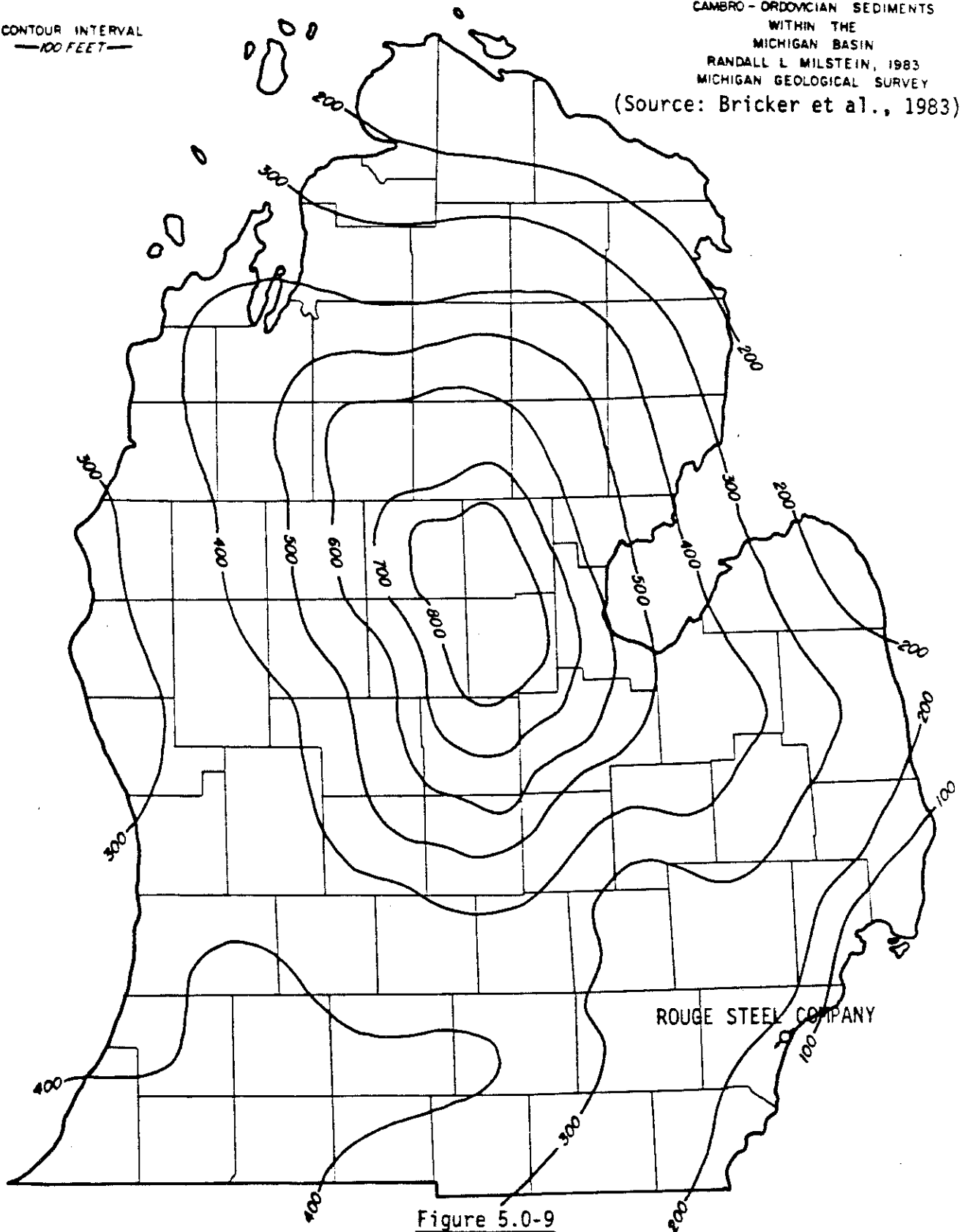


Figure 5.0-9

EAU CLAIRE ISOPACH MAP

5.3 STRUCTURAL GEOLOGY

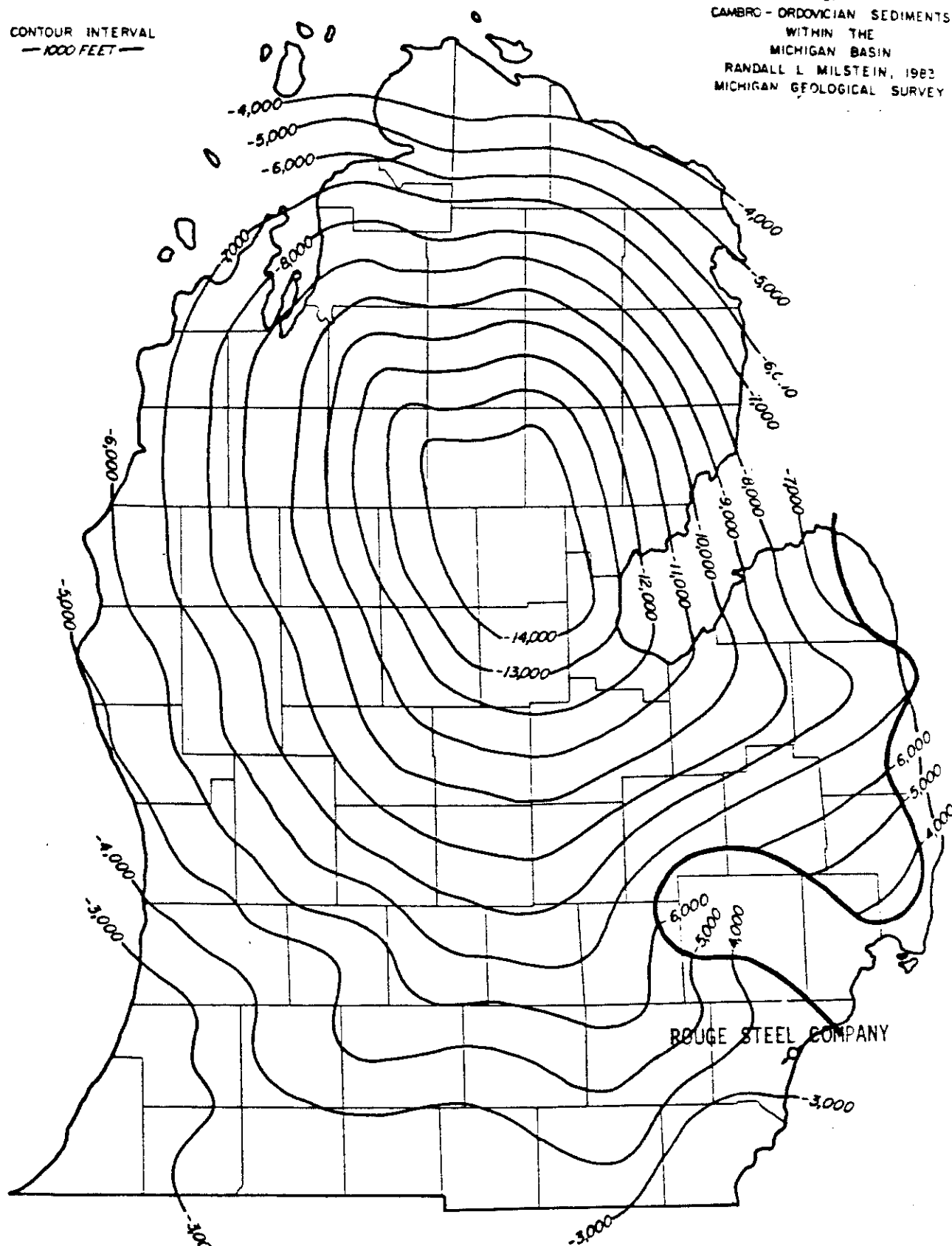
The RSC is located within the Michigan Basin, a synclinal tract in which the sediments dip towards a central point. The regional structural dip of the major consolidated sedimentary sequences is approximately 103' per mile to the northwest. Within the area of review there is a lack of complex geologic structures such as faults or folds. The Mt. Simon Sandstone and Eau Claire Members of the Munising Formation are nearly flat lying with a shallow dip as seen in the structure contour maps, Figures 5.0-10 and 5.0-11. They are areally extensive and not bound by faulting or folding which might pose a constraint to waste disposal operations. In addition, the Mt. Simon Sandstone and Eau Claire Members are confined above by thick sequences of areally extensive shale, limestones and dolomites. Impermeable Pre-Cambrian granite serves as a lower confining layer and is considered the dominant structural controlling mechanism during deposition. The influence of the Pre-Cambrian Basement during the deposition of the Mt. Simon Sandstone and Eau Claire Members is clearly evident in the configuration of the structural contour maps Figure 5.0-10 and Figure 5.0-11. The thickness of the Mt. Simon Sandstone and Eau Claire Member varies significantly as seen in the isopachous maps, Figures 5.0-8 and 5.0-9, respectively.

5.4 MINING AND SOLUTION CAVITY ACTIVITIES

The RSC plant is located in an area underlain by thick evaporite deposits of the Saline Group of Silurian Age. Salt within the evaporite deposits has been mined and also utilized for liquified petroleum gas (LPG) storage.

CONTOUR INTERVAL
— 1000 FEET —

SELECTED STUDIES
OF
CAMBRO-ORDOVICIAN SEDIMENTS
WITHIN THE
MICHIGAN BASIN
RANDALL L. MILSTEIN, 1983
MICHIGAN GEOLOGICAL SURVEY



MT. SIMON STRUCTURE CONTOUR MAP

Figure 5.0-10

(Source: Modified after
Bricker et al., 1983)

CONTOUR INTERVAL
— 1000 FEET —

SELECTED STUDIES
OF
CAMBRO-ORDOVICIAN SEDIMENTS
WITHIN THE
MICHIGAN BASIN
RANDALL L. MILSTEIN, 1983
MICHIGAN GEOLOGICAL SURVEY
(Source: Bricker et al., 1983)

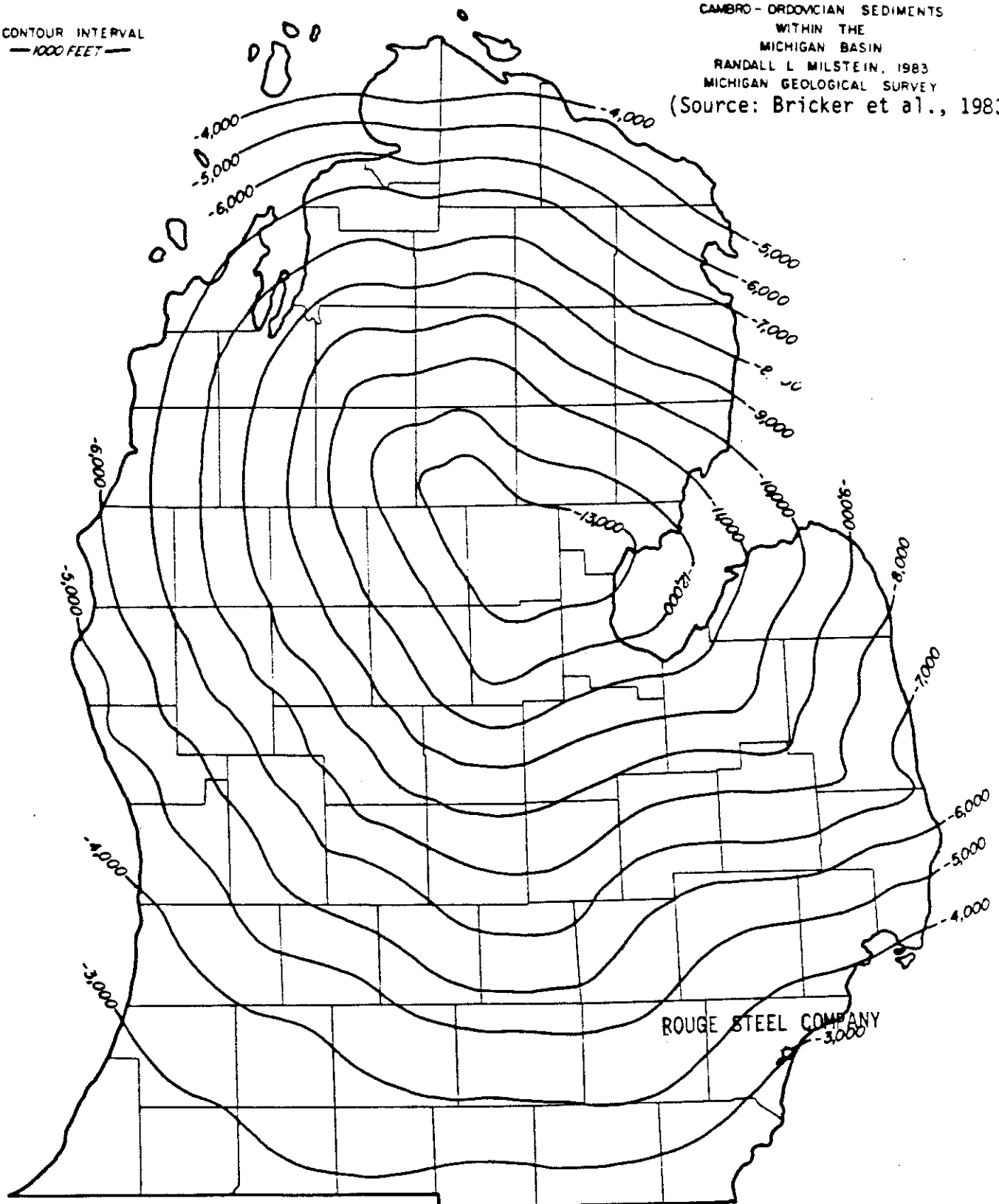


Figure 5.0-11

EAU CLAIRE STRUCTURE CONTOUR MAP

5.4 MINING AND SOLUTION CAVITY ACTIVITIES (Continued)

The Salina Salt is regionally extensive occurring in the subsurface throughout most of Michigan's southern peninsula. More than 70% of the state's salt production occurs in Wayne County, the southeastern portion of the Michigan Basin at a subsurface depth ranging from 1000' to 1500'.

Major deposits of bedded salt such as the Salina were laid down in semi-isolated, gradually sinking basins under acid conditions in which evaporation exceeded precipitation and inflow by streams.

Most of the salt in the Detroit area was mined by the International Salt Company. The approximated mined area as of 1977 is indicated in Figure 4.0-1. The Salina Salt is described as light gray translucent with banding of anhydrite laminae which contain carbonaceous matter and scattered pyrite grains. Major production is from the uppermost salt bed located at a depth of approximately 1000' which is 300' to 400' thick. Abrupt lateral changes in lithology are noted in this salt sequence especially near the basin margins. The Salina Salt pinches out to the south in Wayne County and is absent in the next county.

The Salina Salt is also used for LPG storage. The LPG wells are located in Figure 4.0-1. Records included in Appendix 9.0-A indicate that these wells were properly plugged and abandoned and the storage caverns purged and filled with brine by 1970. Neither the mining operations or the storage caverns are expected to adversely affect disposal well operations. The lowermost extent of the Salina Group is located at a depth of approximately 1900' which is more than 1800' above the injection zone.

5.5 CROSS SECTION

A cross section was constructed using representative wells located in Wayne County, Michigan as shown in Figure 5.0-12. The cross section, Figure 5.0-13, illustrates the local stratigraphic relationships of the Mt. Simon Sandstone and Eau Claire Members of the Munising Formation disposal reservoir, and confining strata above and below. In addition, it delineates the base of the usable source of drinking water within the study area. It demonstrates that in Wayne County, the Munising Formation and its respective confining layers are areally extensive, generally flat lying, and are not bound by geologic constraints such as faulting or folding.

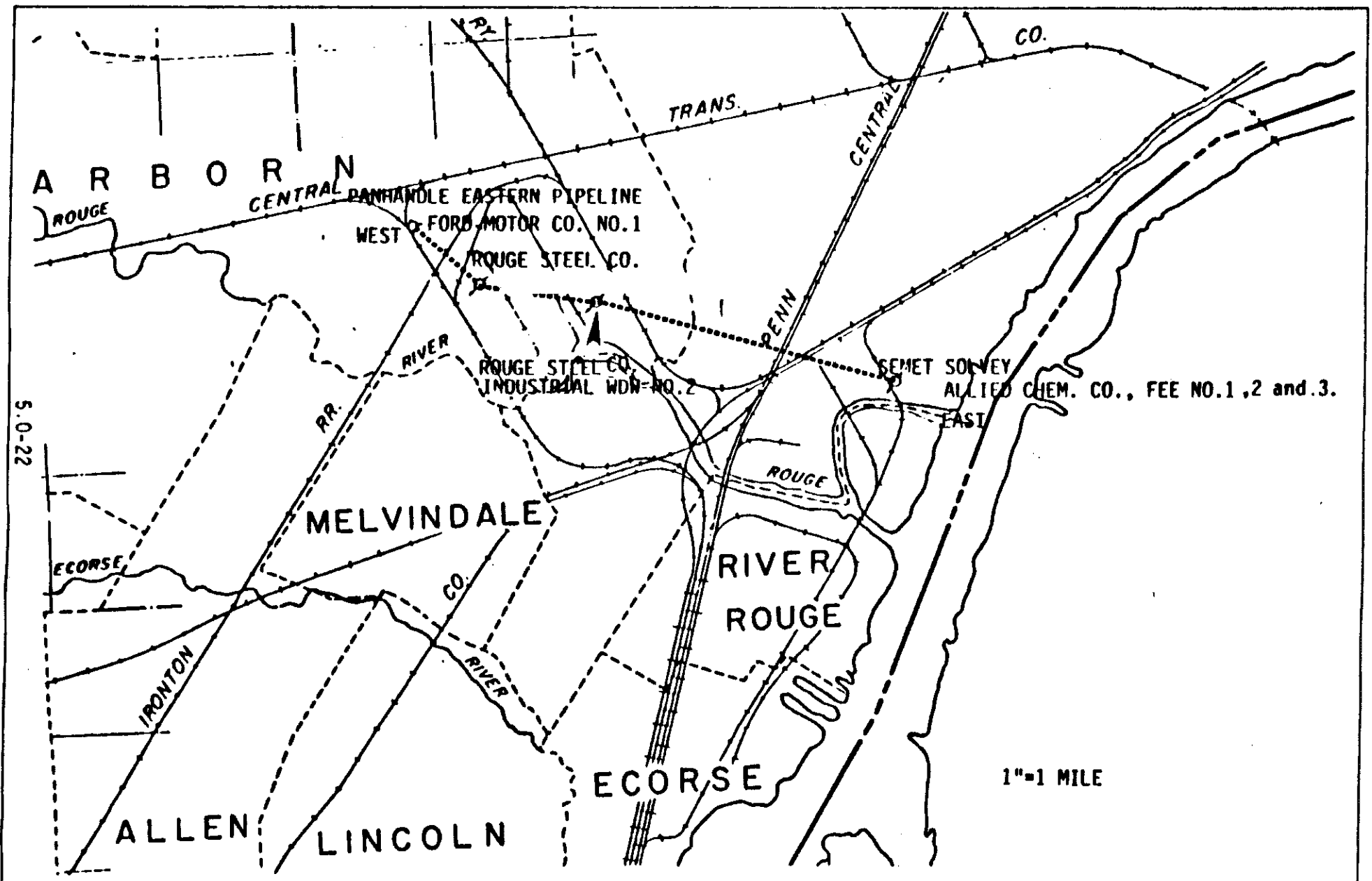


FIGURE 5.0-12. LOCATION MAP OF GEOLOGIC CROSS SECTION, WEST-EAST. Source: Modified after MDNR, 1979

5.6 SEISMIC ACTIVITY

Rouge Steel Company is located in one of the regions of the United States which has a minor occurrence of seismic activity. A seismic risk map, Figure 5.0-14 has been created based on past seismic events. The project area is located in an earthquake risk zone of 1. No damage from earthquakes is expected. Approximately six earthquakes have been recorded within the area and are listed in Table 5.0-2. Figure 5.0-15 locates the epicenter of each occurrence of seismic activity.

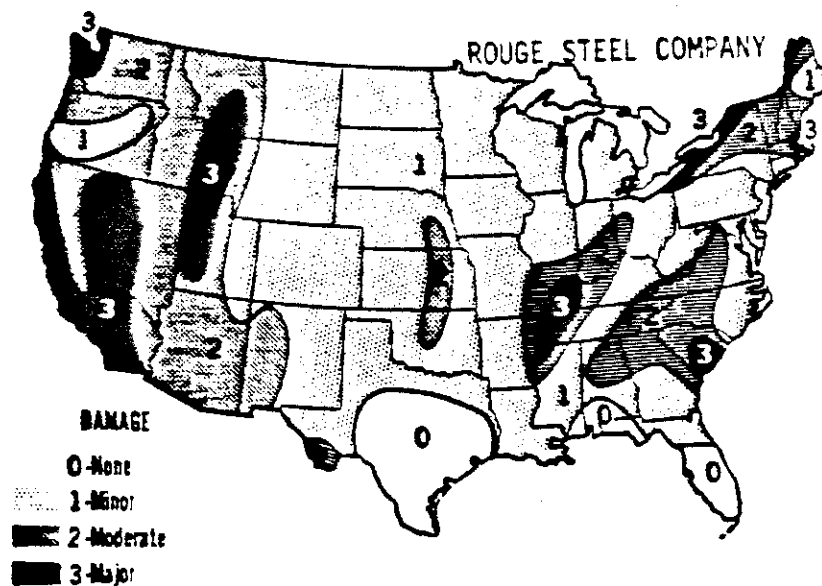
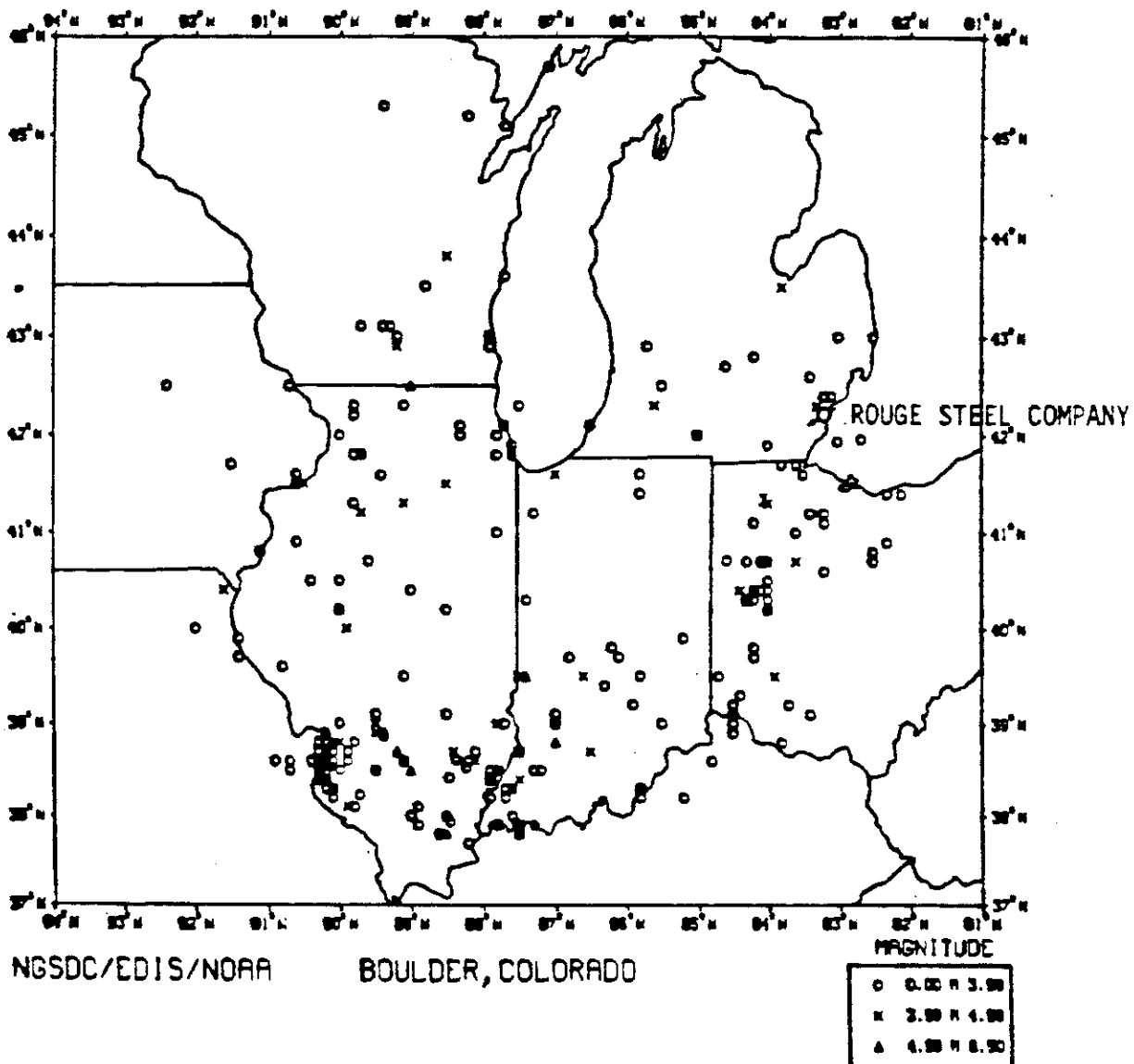


FIGURE 5.0-14
SEISMIC RISK MAP OF THE UNITED STATES

TABLE 5.0-2
EARTHQUAKE DATA

<u>Date</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Intensity</u>
**1 8/17/1877	42.3 N	83.3 W	V
**2 8/17/1877	42.3 N	83.3 W	V
**3 8/17/1877	42.3 N	83.3 W	V
**1 2/27/1876	42.4 N	83.2 W	-
**2 2/27/1876	42.4 N	83.2 W	-
3/13/1938	42.4 N	83.2 W	IV

**Indicates a possible duplicate



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6.0 RESERVOIR PROPERTIES

6.1 GENERAL

A regionally extensive reservoir, the Munising Formation is utilized by RSC's disposal well No. 2. It consists of two members, the Mt. Simon and the Eau Claire.

6.2 INJECTION ZONE DATA

The reservoir characteristics summarized in Table 6.0-1 were used to analyze the pressure and flow regimes in the Munising Formation disposal reservoir. Injection zone data was obtained from existing waste disposal well operations occurring at RSC and the Detroit Coie Plant which is adjacent to the study area. The following parameters required additional discussion.

TABLE 6.0-1
SUMMARY OF RESERVOIR CHARACTERISTICS
Munising Formation

Injection Zone Interval	3887'± - 4268'±
Net Sand Thickness	242'±
Net Porous Thickness	194'±
Flowrate, gpm (average/maximum)	50/100
Porosity, %	10
Permeability, md	50
Viscosity, cp	0.8
Compressibility, psi ⁻¹	7 x 10 ⁻⁶
Midpoint of Injection Zone, ft.	4078
Reservoir, Pressure (0.46 psi/ft.)	1876
Hydrostatic Pressure, psi	2226
Water Saturation, %	100
Fracture Gradient, psi/ft.*	0.8

NOTES:

Net porous thickness is 80% of net sand thickness to allow for a conservative estimation of reservoir properties.

Waste pickle liquor specific gravity - 1.26.

*Estimated

6.2 INJECTION ZONE DATA (Continued)

Permeability (k) - Permeability values for the Munising Formation have been obtained from full hole cores taken from Ford Motor Company, Industrial Waste Disposal Well No. 2. Appendix 6.0-A shows the results of the core analysis. An average air permeability of 60 md is calculated; however, a more conservative value of 50 md is used for the reservoir simulation model.

Net Sand (h) - The effective thickness for the Munising Formation is approximately 194'. Porous sand thickness was determined by a compensated neutron log from Ford Motor Company, Industrial Waste Disposal Well No. 2.

6.3 FORMATION FLUID ANALYSIS

Samples of the formation fluid from the Eau Claire Member of the Munising Formation were obtained during the drilling of Rouge Steel Company, Industrial Waste Disposal Well No. 2. A detailed summary of the chemical analysis of the formation fluids is shown in Appendix 6.0-B

6.4 PIEZOMETRIC SURFACE AND STATIC FLUID LEVEL

Insufficient data was available to generate a piezometric surface map of the disposal zone. The expected static fluid level was calculated using the reservoir pressure and wastewater specific gravity information provided in Table 6.0-1.

6.4 PIEZOMETRIC SURFACE AND STATIC FLUID LEVEL (Continued)

Static Fluid Level = Reference Depth - Height of Fluid Column

Where: Height of Fluid Column $\frac{\text{Bottom Hole Pressure at Reference Depth, psi}}{(\text{Wastewater Specific Gravity}) (0.433 \text{ psi/ft})}$

Height of Fluid Column $\frac{(1876 \text{ psi}) \text{ at } 4078'}{(1.26) (.433 \text{ psi/ft})}$

$$4078' - 3438' = 640'$$

Static Fluid Level = 640' below ground level

7.0 INJECTION WELL OPERATIONS

7.1 RESERVOIR MECHANICS AND ASSUMPTIONS

In order to model and make predictions on the hydrodynamics of the underground injection of waste fluids, it is necessary to make several assumptions. The first is that the disposal reservoir is a horizontally layered homogeneous, porous and permeable saline aquifer with low permeability confining layers above and below. This is a necessary assumption although the injection zone is not entirely homogeneous in regard to permeability and porosity. However, the disposal reservoir parameters are averaged to simulate homogenous conditions.

7.1 RESERVOIR MECHANICS AND ASSUMPTIONS (Continued)

Specifically it is assumed that viscosity and density of the injected liquids do not change at reservoir conditions. No changes are expected to occur because of the uniform temperature and pressure characteristics of the disposal reservoir surrounding the RSC plant.

The third assumption is that the injected wastewaters can move out uniformly and radially in all directions and that the relative thickness of the disposal reservoir remains fairly constant. It is also assumed that confining layers remain constant over similar distances. This is a valid assumption as shown by the geologic cross section in Figure 5.0-13.

To describe the mechanics of waste fluid injection it is necessary to visualize the disposal reservoir before injection begins. The pore spaces are fully filled with a native brine. This condition is known as 100% water saturation. Storage of wastes in the disposal reservoir is not available except by displacement of the native fluid. In subsurface saline aquifers storage is obtained by compression of the sandstone reservoir and native fluid. Most disposal wells require sufficient surface injection pressures to displace the fluid outward in a radial flow pattern to develop a "water drive" mechanism.

As soon as injection begins, a cone of pressure elevation develops immediately with its apex at the wellbore. The amount of pressure build-up is determined by wastewater flowrates and reservoir properties. The long term effects are transmitted to the hydrologic boundaries of the disposal reservoir. In this case, the pressure effects are spread over a very large area.

7.2 RESERVOIR PRESSURE BUILD-UP MODEL

The pressure increase in the Munising injection zone was calculated using the following equation developed by Matthew and Russell, 1967:

$$p = \sum_{n=1}^{\infty} \frac{70.6q\mu}{kh} \left\{ Ei \left[\frac{39.5\phi\mu cr^2}{kt} \right] + 2S \right\}$$

$$Ei(x) = -0.5772 - \ln x - \sum_{n=1}^{\infty} \frac{(-x)^n}{n \cdot n!}$$

Where:

- n = number of wells
- q = injection rate (STB/D)
- μ = viscosity, cp
- r = radial distance, ft
- t = time, days
- k = permeability, md
- h = reservoir thickness, ft
- ϕ = porosity, fraction
- c = total compressibility, psi^{-1}
- S = skin factor (assumed 0)

The detailed geologic report supports the assumption that the injection zone acts as a separate confined disposal reservoir. The reservoir model includes by superposition the pressure effects of both the existing and proposed injection wells.

7.2 RESERVOIR PRESSURE BUILD-UP MODEL (Continued)

Table 6.0-1 is a listing of all the reservoir properties of the injection zone used to predict 20 year pressure build-up effects and wastewater migration. Note that maximum flowrates are used in prediction of pressure build-up.

7.3 INJECTION ZONE

The pressure build-up in the Munising injection zone is calculated for a 20 year period. The reservoir model assumes that the flowrate for existing well No. 2 is 20 gpm. These values were selected to reflect a maximum pressure increase in the injection zone. Figure 7.0-1 is a computer generated isobar map illustrating the 20 year pressure build-up.

The reservoir model clearly shows that there is virtually no way that the pressure increases due to waste injection will cause vertical migration or formation fracturing. Because worst case conditions are presented, actual pressure build-up will be much less.

7.4 RADIAL MOVEMENT

A good estimate on where the waste fluids finally reside can be made by assuming that the wastewater will uniformly occupy an expanding cylinder with the disposal well at the center. By using established reservoir and flowrate data the fluid front radius can be predicted.

7.4 RADIAL MOVEMENT (Continued)

Because the disposal reservoir is confined above by very low permeability shale and limestone, and below by Precambrian Granite, the waste fluids move in a horizontal direction and not in an upward direction which could pollute ground water resources. Under these conditions the waste fluids occupy the pore spaces of the reservoir in the area immediately surrounding the wellbore. As injection continues the radius of waste fluid front increases at a slow rate.

The waste fluid front radius can be calculated using the following equation:

$$r = \sqrt{\frac{V (.1337 \text{ ft}^3/\text{gal})}{\pi h \phi}} \quad (\text{Warner, 1977})$$

Where: r = radial distance of wastewater front from well, ft.

V = cumulative volume of injected wastewater, gallons

h = reservoir thickness, ft.

ϕ = average porosity, fraction

The information on the radial movement of waste fluid is summarized in Table 7.0-1. It includes a 20 year cumulative waste volume and a calculated waste front radius. The calculated waste front radius was derived using the above equation and cumulative waste volume data for the disposal zone at maximum flowrates.

7.4 RADIAL MOVEMENT (Continued)

TABLE 7.0-1
RADIAL MOVEMENT

20 Year Cumulative Volume
(Million Gallons)

Radius (ft)

1051.2

*Volume calculations are based upon a maximum flowrate of 100 gpm

The distance of wastewater travel from the injection wells is small and poses no problem. It is obvious that the injected wastewater will not be close to any artificial penetrations if actual reservoir conditions comply even generally with those that are assumed. The predicted twenty year waste front radius is based upon worst case conditions. It is assumed that the well will be in continuous operation at maximum flowrates and that the same zone will be utilized over the entire twenty years.

7.5 FORMATION FRACTURE GRADIENT

A fracture gradient of .80 psi/ft. has been used for the injection zones. The fracture gradient is based upon breakdown pressures established under the EPA's UIC regulations.

The reservoir and fracture pressures are shown in Table 7.0-2. If the reservoir pressure is subtracted from the calculated fracture pressure, the maximum amount of reservoir pressure build-up can be determined. It should be noted that the predicted 20 year pressure build-up values are under the pressure required to fracture the formation.

7.6 SURFACE INJECTION PRESSURE

The predicted surface injection pressure (S.I.P.) after 20 years of continuous operation and maximum surface injection pressure S.I.P. (max) can be computed using the following equations:

$$\begin{aligned} \text{S.I.P} &= (\text{initial reservoir pressure} + (\text{20 year pressure} \\ &\quad \text{build-up} + (\text{friction loss in injection tubing}) - \\ &\quad (\text{hydrostatic pressure of waste fluid}) \end{aligned}$$

$$\begin{aligned} \text{S.I.P (max)} &= (\text{fracture pressure}) + (\text{friction loss in injection} \\ &\quad \text{tubing} - (\text{hydrostatic pressure}) \end{aligned}$$

Table 7.0-3 provides a 20 year surface injection pressure and maximum surface injection pressure for the proposed waste disposal wells. The table also includes an estimation of the reservoir pressure, 20 year pressure build-up, tubing friction loss and the hydrostatic pressure of waste fluid. The values for friction loss were calculated at maximum flowrates. The hydrostatic pressure calculation was based upon an average waste specific gravity. The predicted 20 year surface injection pressure does not include the increase in surface injection pressure due to wellbore fill up and/or formation damage. This means that surface injection pressures can be much higher than estimated without an increase in bottom hole pressure.

Table 7.0-4 provides a summary of operating data including average/maximum injection rates, average/maximum surface injection pressure, fracture pressure and recommended maximum surface injection pressure.

TABLE 7.0-2
RESERVOIR AND FRACTURE PRESSURES

<u>Injection Zone</u>	<u>Reference Depth (ft) (midpoint)</u>	<u>Reservoir Pressure (0.46 psi/ft)</u>	<u>20 Year Pressure BHP</u>	<u>Fracture Pressure (0.80 psi/ft)</u>
3887'± - 4268'±	4078'	1876	485	3262

TABLE 7.0-3
SURFACE INJECTION PRESSURES 20 YEAR PREDICTIONS

<u>Reservoir Pressure, psi</u>	<u>20 Year Pressure Build-Up, psi</u>	<u>Tubing Friction Loss, psi</u>	<u>Hydrostatic Pressure, psi</u>	<u>SIP psi</u>	<u>SIP (max) psi</u>
1876	485	100	2226	235	1386

NOTES: Predicted surface injection pressure do not include increases in wellhead pressure due to wellbore fill-up or formation damage.

ASSUMPTIONS: Bottom hole pressure is at mid point of injection zone at 4078'.

Tubing friction loss assumes average flowrates in 3850'± of 3 1/2" O.D. FRP tubing.

Hydrostatic pressure assumes fluid specific gravity of 1.26.

TABLE 7.0-4
SUMMARY OF OPERATING DATA

<u>Average Injection Rates</u>		
50 gpm	72,000 gpd	2.19MM g/mth.
<u>Maximum Injection Rates</u>		
100 gpm	144,000 gpd	4.38MM g/mth.
<u>Average Surface Injection Pressure</u>		
250 - 500 psi		
<u>Maximum Surface Injection Pressure</u>		
1386 psi		
<u>Recommended Surface Injection Pressure Limitation</u>		
1300 psi		
<u>Fracture Pressure</u>		
.80 psi/ft. or 3262 psi at reference depth		

gpm = gallons per minute

gpd = gallons per day

M g/mth. = million gallons per month

Rec'd 1/28/86

Copy all document
for our files.

1. Draft memo
2. Check w/ permit
writors to see if
any corrective
actions in house
3. Call RCRA to
say we have
long v will
transmit.

Valerie

please transmit
the Rouge Steel reply to
RCRA via cover memo
from. (Harrison to Stigman)

See Greg's note. We need
to say in the cover memo
that we will forward ~~future~~
future RCRA-related reports to them.
We need to coordinate w Waste
on these type of issues to avoid
this from happening. Can you
put a memo together on this by
next WK? I suggest you call
the RCRA contact 1st to let them know
it's coming.

Mike - please prepare
a draft memo
SAT

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Buch, Steve	
Chico, Anita	
Williams, Annie	
OFFICE OF THE BRANCH CHIEF	
Joseph F. Harrison, Chief	
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JAN 23 1986



3001 Miller Road
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Dearborn, Michigan 48121-1631

January 15, 1986

RCRA Activities
Region V
P. O. Box A3587
Chicago, Illinois 60690

Attention: ATKJG

Gentlemen:

Rouge Steel Company received the attached Certification Statement on January 14, 1986, and is returning it unsigned.

The Company has applied for, and received a permit to operate an underground injection well at the Rouge Manufacturing Complex (Permit No. MI-163-LW-0002). One of the permit conditions was to submit a corrective action program for continuing releases of hazardous waste or hazardous waste constituents. The preliminary assessment was submitted on January 3, 1986, to the following address:

Mr. Charles H. Sutfin
Director, Water Division
U.S. EPA, Region V
230 South Dearborn Street
Chicago, Illinois 60604

Rouge believes that a second submission of the same material should not be required, and that the previous submission complies with the 1984 Amendments.

Very truly yours,

A handwritten signature in cursive script, reading 'Gerald Doroshewitz'.

Gerald Doroshewitz
Supv., Control & Liaison
Environmental Control

attachment

cc: Mr. Charles H. Sutfin

EXHIBIT II

ROUGE STEEL COMPANY

WASTE ANALYSIS PLAN

- A. Waste to be analyzed: Coke Oven Final Cooler Water.
B. Parameters to be Measured and Methods of Analysis:

The material listed in Part A (above) will be evaluated for hazardous characteristics following procedures outlined in "Test Methods for Evaluating Solid Wastes, SW-846", 2nd Edition. It will be evaluated for ignitability, corrosivity and reactivity.

Specific parameters and their required specific procedures are as follows:

<u>Parameter</u>	<u>Method</u>
Ignitability	SW-846, 1010
pH	SW-846, 9040
Reactivity	
Cyanide	SW-846, 9010
Sulfide	SW-846, 9030
Specific Gravity	ASTM-D1429
Benzene	SW-846, 8020
Phenols	SW-846, 8040
Total Suspended Solids	EPA 160.2
Naphthalene	SW-846, 8100

- C. Frequency of Waste Characterization:

The characteristics of the waste generated at this facility are basically constant. Therefore, a sampling frequency of once in every twelve months will be followed. The material shall be sampled at the injection line after the injection pump.

- D. Analytical Facility

The samples will be taken by Rouge Steel Company personnel who have received appropriate training in, and have had considerable experience in sampling various materials. Analysis will be performed by Ford Motor Company, Central Laboratory Services. Other sampling and analysis service agencies with equivalent capabilities may also be used.

3.2 DEEP WELL DISPOSAL (Continued)

The primary advantage of proper deep well disposal is that the technique has been demonstrated to be environmentally attractive and cost effective. In addition, the surface requirements for an injection well is very small when compared to the other alternate treatment schemes. A recent report by the Controller General of the United States (CED-81-21), November, 1980) concluded that deep well disposal should be encouraged as a hazardous waste disposal alternative due to its environmental advantages over landfill and cost advantages over incineration. The EPA has recently concluded that land application is the least desirable method of managing hazardous wastes due to possible long term dangers (Texas Pollution Report, May 27, 1981).

Underground injection of coke oven final cooler water and other very similar wastewaters has been proven as an environmentally safe and successful disposal technique in many states. There are many good examples of companies that have installed and are operating injection well systems which are basically very similar to the subject well. Throughout the United States many companies have justified, permitted and installed waste disposal wells for specific wastewater disposal requirements. Rouge Steel Company along with many other companies recognized the common advantages associated with deep well disposal.

The attached technical report provides information on all geologic and technical aspects of using underground injection as an ultimate disposal technique for coke oven final cooler water.

4.0 HYDROLOGY

4.1 GENERAL

The RSC plant is located within the Rouge River Basin, an area which encompasses approximately 467 square miles. The altitude of the land surface within the Rouge River Basin ranges from a high of 1010' in the morainal hills to a low of 574' at the mouth of the Rouge River. At the RSC plant, the elevation ranges from 580' to 590' as illustrated in the topographic map, Figure 4.0-1.

4.2 REGIONAL HYDROLOGY

Glacial deposits which form the shallow ground water system unconformably overlies truncated bedrock units as shown in the hydrogeologic cross section, Figure 4.0-2. The glacial sediments, commonly referred to as glacial drift, were deposited during the last period of glaciation known as the Wisconsin Advance. In Wayne County, the thickness of the glacial drift ranges from 390'± in the northwest corner to 10'± in the south central region. At the RSC plant, the glacial drift is approximately 105'± thick.

The primary aquifer system producing ground water in Wayne County is the glacial drift system. Table 4.0-1 lists the principal water bearing formations and their properties within the Detroit area. Ground water occurs under both water table and artesian conditions. The glacial deposits include moraines, till plains, lake plains and outwash plains. These deposits as related to aquifer systems are summarized below:

System	Series	Formation	Lithology	Approximate thickness (feet)	Water-bearing properties
Quaternary.	Recent and Pleistocene (?).	Alluvium.	Fine to coarse sand and gravel, clay, silt.	0-87	Yields few large supplies along Huron and River Rouge Valleys.
	Pleistocene.	Drift.	Sand, gravel, clay, silt.	0-330	Yields small to large supplies of water of good quality and is the source of water for nearly all the wells in the area.
Carboniferous.	Mississippian.	Coldwater shale.	Blue, green, and gray shales and lenses of sandstone.	0-890	Locally the sandstone lenses may yield small supplies of fresh water to wells.
		Sunbury shale.	Brown to black shale.	0-38	Yields no water to wells.
		Berea sandstone.	White and gray to yellowish coarse sandstone. Contains lenses of hard blue shale.	0-155	Generally yields small supplies of highly mineralized water. Domestic supplies of relatively fresh water have been obtained locally.
		Bedford shale.	Gray limy shale.	0-135	Yields no water to wells.
Carboniferous and Devonian.	Mississippian (lower) and Upper Devonian.	Antrim shale.	Black carbonaceous shale; thin gray shale members in lower part.	0-294	Yields moderate supply of fresh water in the Belleville area. Generally, water is mineralized.
Devonian.	Middle Devonian.	Traverse formation.	Gray to bluish calcareous shale and thin-bedded limestone.	0-515	Yields moderate supplies of highly mineralized water.
		Dundee limestone.	Buff to light-brown cherty limestone and dolomitic limestone.	0-320	Yields moderate supplies of highly mineralized water.
		Detroit River dolomite.	Fine-grained, gray to buff, thin-bedded dolomite; some limestone, anhydrite, salt, and sandstone.	0-485	Yields moderate supplies of highly mineralized water.
		Sylvania sandstone.	White friable sandstone and sandy dolomite. Some sandy limestones are present.	80-350	Locally yields small supplies of fresh water to shallow wells in the extreme southeast part of the Detroit area. Generally yields large supplies of highly mineralized water.

Table 4.0-1 Water-bearing properties of the principal formations in the Detroit area.

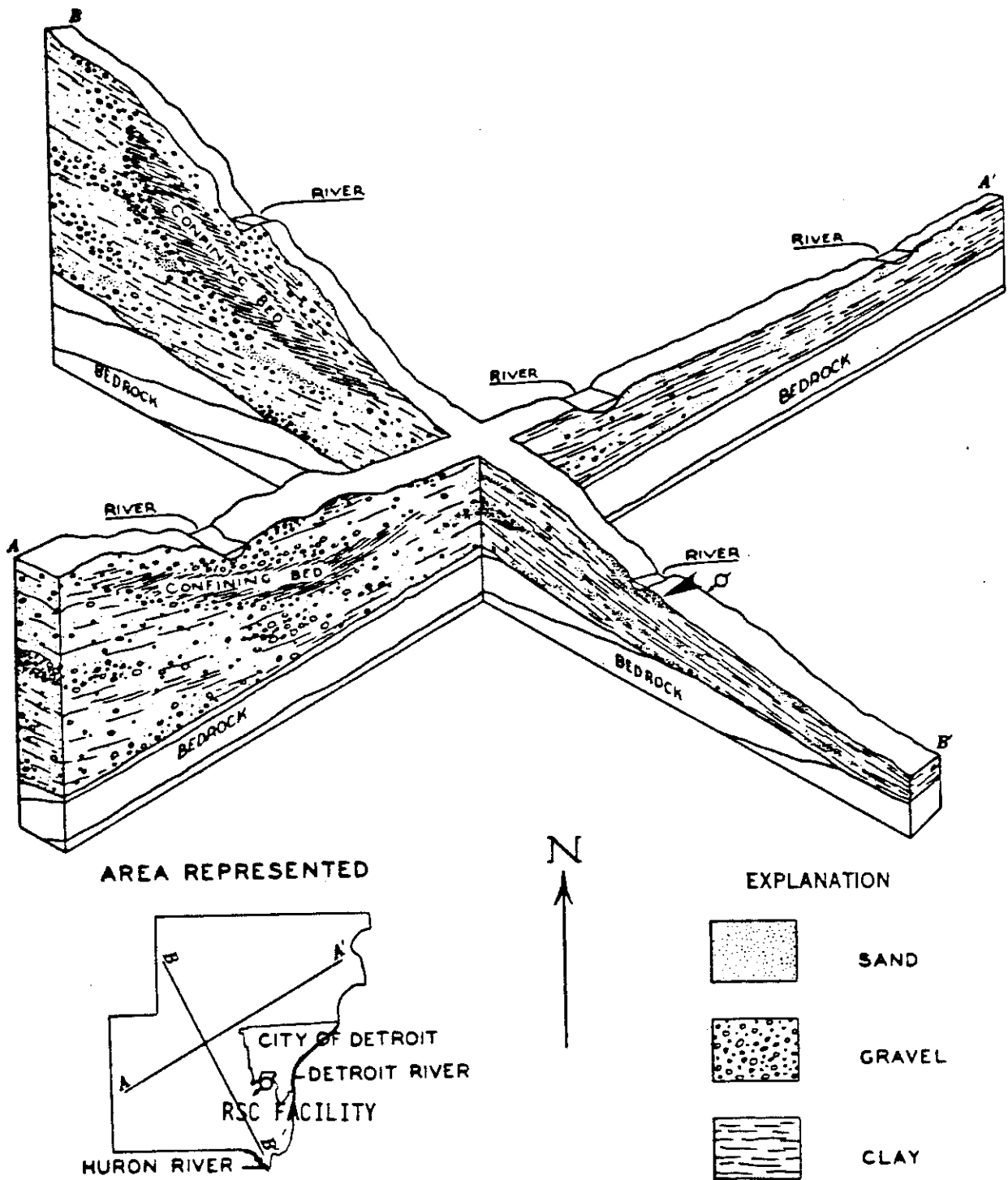


Figure 4.0-2

Hydrogeological Cross Section of Detroit area.
(Source: Wisler et al., 1952)